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IT is our aim, our ambition, our aspiration even, to build our Journal worthily and well, not for the hour only, but for future years; for the few men in the forefront of an enduring and a laborious Art; for the disciplined ranks of a distinguished Profession; for the young men—Architects to be—and for all who love a clustered column or a flying buttress, a traceried window or a Greek frieze; for the man, too, who honestly plumbs a jamb. . . . . .

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THE

BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

Feb. 18, 1903. Vol. 17, No. 419. 9, East Harding Street, E.C.

The Cluny Museum, Paris. NOT often is it given to a collection of antiquities and works of art to be housed in so interesting a building as the Hôtel Cluny. To wander through room after room filled with characteristic old French furniture, tapestry, armour, jewellery, carvings in many materials, and ancient Gothic crowns is pleasant and—if the process be not hurried—instructive at any time; but such things, however valuable, are usually contained in a modern building. The Cluny collection is distributed throughout the rooms and galleries of the "hotel" or town residence of the old Abbots of Cluny. A little courtyard separates it from the street; the building, erected between 1480 and 1505, is long and comparatively low—low, that is, for a French design; it is simple, with flat-topped windows, each broken only by a strong stone mullion and transom; dormers, very light and ornate, divide the roof, and towers in the interior angles contain the old doorways; the whole design is easily grasped, and it is matter for regret that this phase of French domestic architecture, contemporary with our Tudor manor-houses and colleges, lasted for so short a time, or has at least left so few examples in Paris. Here we miss our familiar Tudor arch; its place is taken either by the flattened "ogee" which has an appearance of weakness or by a flat lintel, but there is a decided air of quaintness about the place. The contents are not on the scale of those at South Kensington, nor is the armour equal to that of the Wallace collection; the furniture, hangings, arms and carvings, however, seem singularly appropriate when placed in rooms very often of the same period as themselves; this it is which gives the Musée Cluny its charm and interest. The chapel, small though lofty, is very striking; a single column in the centre spreads at the summit into an elaborate vaulted roof not unlike a small edition of the Chapter-House at Westminster; a spiral staircase, now used for the visitor's exit, was evidently built to enable the abbot to scrutinize and possibly reject undesirable strangers at service; a cage of stone tracery in Flamboyant openwork protects the head of the stairs, and its opening is so narrow that only one person at a time can enter. Adjoining and even forming part of the "Hotel" are the remains of the Roman baths built by Constantius and rebuilt or improved by Julian the Apostate. The great frigidarium remains, a vaulted hall 65ft. by 45ft. and 54ft. high; all ornamental work has disappeared, but the apartment is not without grandeur; it is built of alternate courses of squared stones and bricks, covered in parts with 4in. or 5in. of cement; the tepidarium and the hypocaustum for the warming apparatus can still be discerned. Throughout the Hôtel Cluny the great fireplaces are very striking; the Continent in our day is no place for cheerful "firesides," as an Englishman speedily finds who travels in the winter, but open fires were once as general as with us; in this case their carvings and ornaments exhibit beautiful Renaissance detail mingled with Gothic. The traveller who takes his Musée Cluny in leisurely and appreciative fashion feels as he leaves it that he has had a glimpse of Old France and her arts at a particular epoch, instead of the endless galleries filled with the productions of many ages usually associated with foreign "sight-seeing." A remarkable feature of the interior is the absence of ceilings in many of the rooms; the oaken rafters overhead are left bare and simple, though they are not undecorative. The only stained glass observable is provided by the blazon of the old abbots in every window. The building with its contents was bequeathed to the French nation by the late M. du Sommerard.

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All Hallows', Lombard Street. THE Bishop of London is still considering his attitude in regard to the fate of Wren's last ecclesiastical work in the City. So far his Lordship has cast in his vote with the destroyer, and it is still possible that "the claims of the diocese" will militate against any question of sentiment and the claims of Wren's work upon the reverence and forbearance of his countrymen. Even if the Bishop finally decides to vote for demolition it will still be possible to avert such an artistic, religious and architectural disaster, for the parishioners have the power to veto the scheme, in which case the Bishop cannot proceed without a Parliamentary Bill. This should be very clearly understood. The Bishop has, unfortunately, a very exaggerated idea of the value of the site, which is completely hemmed in by buildings possessing ancient lights over the narrow courts and the strip of churchyard which separate them from the church. Possibly, when it is too late, it will be found that the sum obtainable is out of all proportion to the value of the church from an architectural and educational standpoint. The reason given for destruction is, as usual, that the church has outlived its usefulness. This is not true, as can be proved by the church attendances, and the number of communicants in proportion to the population, but the point is immaterial. When the modern vandal is bent on destruction his speech is plausible and his ways devious. Indeed, it is a strange new race of divines that has come upon us, whose actions are governed by money—to whose deaf ears art, beauty, sentiment and eight centuries of consecration appeal in vain. If the Anglican Church cannot find money to build her new churches without selling or pawning her treasures and sacred buildings, then her mission as a Church should end. The destruction of All Hallows is a strange proposal to appear at the moment when the nation has relieved the Anglican community of the cost of education in its schools.

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More of Liverpool Cathedral. WE do not envy the Liverpool Cathedral Committee. They have created a veritable mountain of prejudice against themselves. Of the designs we hear no more for the present (though the whole question will be reopened when the new designs are exhibited, presumably about the end of this summer), but some caustic remarks have been made about Sir William Forwood's recent statements as to the cost of the work. Sir William strongly resented the remark in the "Times" that it was "almost impossible to arouse any enthusiasm in Liverpool in favour of the cathedral scheme," for the Committee already have £160,000 at their disposal, and when another £40,000 is forthcoming they hope to be in a position to lay the foundation-stone. Sir William asks us to remember that £160,000 exceeds the amount expended on Truro Cathedral, and is almost equal to that spent on Westminster Cathedral; but, as Mr. Myddelton Shallcross points out, the shells only of these great buildings have been erected for the sum named—indeed, when one considers the finishing of Westminster Cathedral according to Bentley's intention the cost is staggering—and at Liverpool there is likely to be great trouble with the site in order that a good foundation may be had on the rock that lies 40ft. below the surface (£100,000 is suggested as the sum needed for this work).

However, Sir William's ideas are no mean ones, for he talks about £500,000 as the ultimate cost of the cathedral on the site which is "second to none in Europe" (there is a wonderful sound in that statement—what a pity one cannot agree !). But between the £200,000 to be ready when the first stone is laid and the ultimate £500,000 there is a difference that it will be troublesome to settle. When the scheme was first mooted a million of money was mentioned as the cost, half to be provided by this generation. Since then the idea has shrunk by one-half. To make much comment on the matter when the design even is not selected would be premature; and while not wishing to prejudice the Committee's appeal, we cannot help expressing the opinion that something like a miracle will be required to find so much money as that suggested.

RECENT WORK IN OXFORD.

By F. HERBERT MANSFORD

(*Photographs by Joseph Mansell.*)

IN its issue for November 13th, 1901, the Builders' Journal published a list of new buildings recently erected in Oxford, with a note on various works of restoration there. This naturally suggested a journey to the city to see with one's own eyes these changes; for Oxford, in spite of its ineffective situation, commands the undying interest of every lover of architecture in this country. A jealous anxiety for its beauties which accompanies the appreciation of them provokes the question, "Is Oxford as beautiful as ever?" But when does a jealous lover get a perfectly convincing and long satisfying answer? Absent from his mistress, the news of some fresh alteration in or about her stirs his feelings afresh. Stepping from the new Shelley Memorial into the "High," and contemplating the buildings between the spire of All Saints' and the tower of Magdalen, we exclaim inwardly, "Yes, beautiful as ever," and reflect that never can the colleges have contained a greater accumulation of paintings, sculptures, books and other treasures. But the visit concluded, even as we leave the city we note the spreading of the commonplace streets which obscure any comprehensive view from the main approaches.

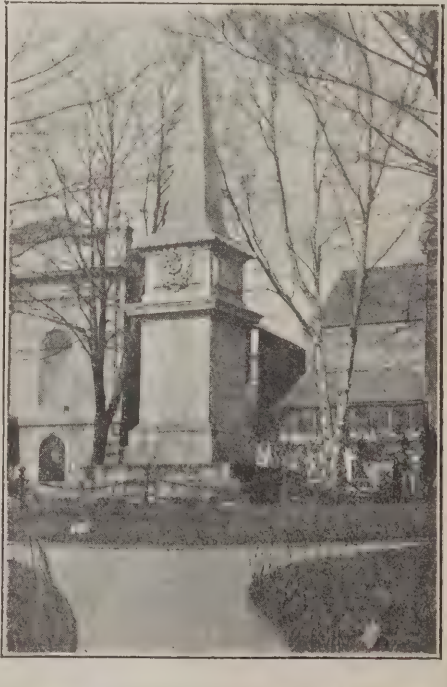
JUBILEE DRINKING FOUNTAIN ON THE PLAIN, OXFORD. E. P. WARREN, ARCHITECT.

INN NEAR FOLLY BRIDGE, OXFORD.

At the time of the Civil Wars the traveller from the west, shadowed by the ruins of Osney Abbey, passed through St. Thomas Street, when a few houses only lined the road, skirted the castle and mill, and so beneath the west gate to Carfax. On the north he found few houses beyond St. Giles's Church, and the buildings of Worcester College (then St. John the Baptist's Hall) stood in the open country. In place of the long rows of shops and villas which now form the approaches from the east, he found a few houses surrounding St. Clement's Church (then in the centre of the roadway leading on to Magdalen Bridge), and scarcely considered himself in town until he had passed below the Chapel of the Holy Trinity, which was above the east gate, near the site of the present Examination Schools. On the south, St. Aldate's Street stretched down to Folly Bridge; the city gate stood between Pembroke and Christ's, just above Bishop King's house. As the river is no longer an important approach to Oxford the town has spread less in this direction than in others; probably the damp situation has also been a factor. The walls were then the visible boundary of the city and proved very effective barriers to the advance of the Roundheads. On the west, south and east sides the Isis, the Cherwell and numerous watercourses, now partly diverted or covered in, meandered o'er the plain or turned it into a vast lake, according to the season, whilst always the citizen looked out upon a placid landscape of watery meadow and wooded hill. Nor can this state of things have greatly altered for many years; even in 1801 the population of the place was only a quarter of that recorded in the last census. Since that date not only have the number of houses increased, but the University has been dignified by the foundation of Keble, Mansfield and Manchester Colleges, by the erection of "the Taylorian," the museums, the noble Examination Schools, the Indian Institute and the new Radcliffe Library; by the enlargement of various colleges, and the restoration and enrichment of their chapels. Half a century ago there were no tapestries by Morris, windows by Burne-Jones, paintings by Holman Hunt, Watts and Frank Holl; no incomparable memorial of Shelley. Neither had the citizens erected the fine town-hall nor the churches by Street, Blomfield, Champneys, Mowbray and Bodley.

Coming to the immediate subject of these notes, it is to be remarked that there has been less important architectural work completed in Oxford during the last few years than, say, during the decade 1880 to 1890; and dealing as we are merely with exterior design, there is not a great deal to be noted.

The only important church recently erected is that of St. John, Cowley, designed by Mr. Bodley; and the broad low western tower is not quite completed, a tower in which the newel stair is placed in the centre of the western wall, and which is of almost unbroken severity until the belfry stage is reached. The exterior walls of the church are faced with ashlar; those of the nave aisles are windowless and are interrupted only by widely-spaced flying buttresses. As the church is covered with a barrel ceiling and roof of wood, these buttresses have merely to counteract the pressure of the stone transverse arches which divide the roof of the nave into two portions and also separate it from the chancel. Mr. Bodley appears to have borne this in mind in designing the buttresses, which could scarcely withstand the pressure of a stone vault. The effect is logical, but meagre to eyes accustomed to buttresses with a greater function and greater consequent bulk. The



SOLDIERS' MONUMENT IN THE QUEEN STREET GARDEN, OXFORD.

architect has given us the long level unbroken ridge which he loves, and which in his hands is always so effective. Behind the church, and connected with it by a cloister, are other buildings lately completed at a cost of £14,000, but too shut in by houses to have any effect upon the appearance of the neighbourhood.

About half-way between this church and the workhouse are new Board schools designed by Mr. Leonard Stokes (see centre plate). They consist of three blocks irregularly disposed upon a spacious site and enclosed by a well-designed iron railing. Each building is characterised by reposeful outline and quietness of detail, the architectural effect largely depending upon the carefully considered coursing of the two varieties of bricks (red and picked yellow stocks) and the carrying up of the angles of the buildings as flanking piers to the gables. This necessitates some expense in the formation of gutters, but certainly gives pleasing character to the design. A bell-turret surmounted by a heraldic vane gives pre-eminence to the principal block, which, however, lacks at present one wing.

The Cowley Road in enlivened by an addition to the Nazareth House (Mr. Goldie, architect) and a quaint tavern, the Elm Tree Inn, a low building with stone mullioned windows set in rough-casted walls.

Where the three roads converge at the Plain is a Jubilee drinking-fountain, which, with its steep stone-slated roof resting on eight columns, its clock and weather-vane, looks very much like a seventeenth-century market cross. It bears the motto—

LYMPHA CADIT, RUIT HORA, SAGAX BIBE
CARPE FUGACEM,

which has been recently rendered by an old graduate:—

> "The water falls, the hour swiftly flies
> Drink one, and seize the other e'er it dies,
> If thou art wise"

The bridge crossed, we note the careful restoration of Magdalen old buildings, where Mr. Bodley has respected the ragwort growing on the walls, and the new tower and quadrangle to the west, which, in spite or their freshness, date mainly from 1882–4. In the High, at the corner of King Street, is the "Eastgate" hotel, with painted wall-sign. The elevations are of rock-faced stone below and rough-cast above, with a roof of pearly-grey slates. Nearly opposite is a new block of shops and lodgings, the five gables and dark mullioned windows of which well preserve the character of the street at this point. Both of these blocks were designed by Mr. E. Prioleau Warren as architect to Magdalen College.

A little further west, at the corner of Logic Lane, is an extension of University Hall, comprising several sets of students' rooms (see p. 6). The elevation towards the High is faced with Box Ground stone, and is of the traditional collegiate character, the only unusual features being the arcaded treatment and angle shafts of the ground storey. The roof is covered with stone slates and broken by gables and dormers. The architect is Mr. H. W. Moore, of Oxford.

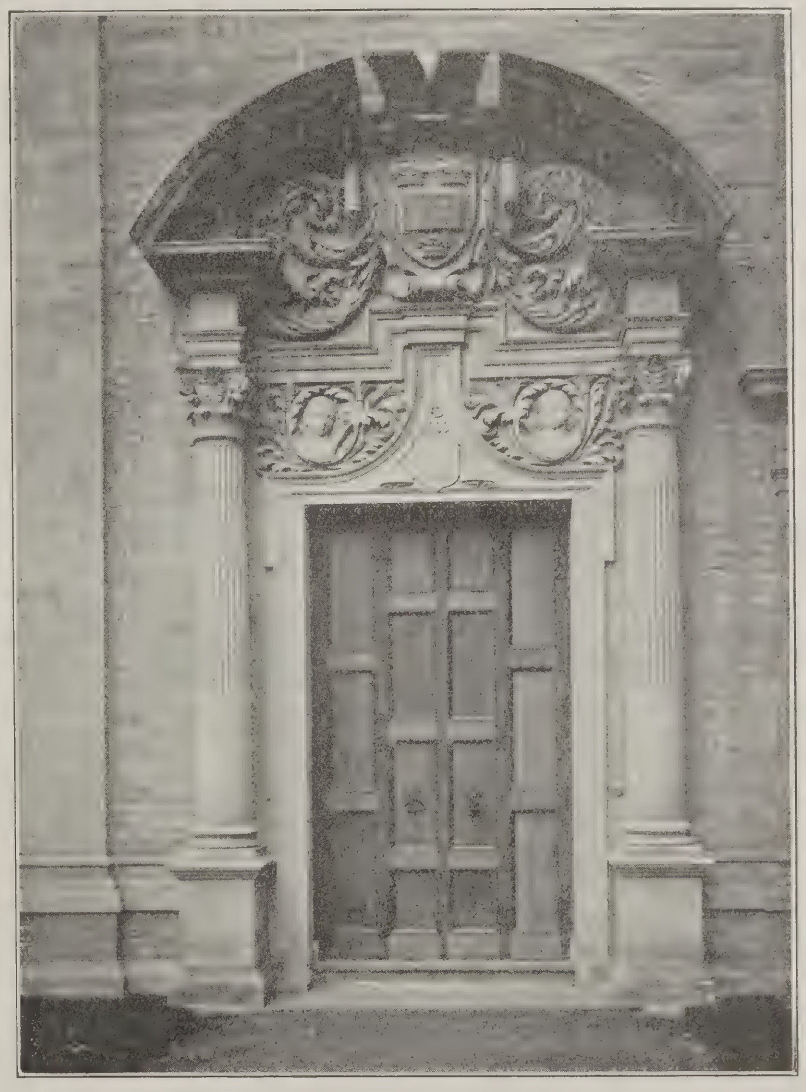
Turning up Queen's Lane, and so into New College, we see the extensive restorations by Mr. Basil Champneys and his completion of the new block towards Holywell Street (see p. 4). Sir Gilbert Scott's portions of these buildings, erected a quarter of a century since, were regarded as excellent specimens of collegiate architecture, but most critics will admit that the recent work is superior. As viewed from the gardens of the college Scott's range has the advantage of standing on higher ground, while Champneys's work appears sunk, yet the latter possesses greater dignity, perhaps due to its simpler outline. Scott's building is capriciously broken up on plan and in elevation, and seems to lack both subordination of one feature to another and continuity of design, in spite of the sameness of materials. Champneys's varied detail renders his work more interesting in spite of the simplicity of the main lines of his design. The Holywell Street elevation is rather more broken up than those towards the gardens, but is almost as charming. The oblong entrance-tower is of greater bulk and height than any other of the college gateways, and contains four lofty floors above the vaulted archway. The whole of these new buildings are faced with a warm cream-tinted stone.

Opposite Manchester College is a large stone-faced private house of which the deeply splayed entrance porch, the traceried windows of the hall and the bold external chimney are the chief points of interest.

Mansfield College has just added unto itself a lodge, presumably from the designs of Mr. Champneys, who, it will be remembered, was architect for the main structure. The pleasing stone of walls and roof and the treatment of the staircase are the chief elements of beauty here—the large area of dormer cheek certainly detracts somewhat from the total effect.

Around the Museum three new structures have been lately completed, scarcely less in harmony with each other than with the Museum itself. To design a series of scientific laboratories is a most difficult problem from an æsthetic standpoint, especially as an adjunct to a building of mediæval character. The architects have ignored entirely this latter consideration, and have given us in one case a commonplace structure devoid of all expression, and in another an unassuming block with distinct Renaissance feeling in the elevations.

The third building, the new Radcliffe Library, although an inseparable foreground to the Museum as generally approached, is also of a Renaissance character, but with a slight, very slight, admixture of Gothic feeling in the sets-off of the buttresses and in the treatment of the windows. Probably a steep gabled roof with a louvre or flêche, such as surmounts the library of Lambeth Palace, would have helped to harmonize the structure with its Gothic neighbour and not have detracted from its appearance when judged apart. The doorway is as dignified as it could well be, considering the threshold is almost level with the lawn; the carving above is rich and vigorous, and the doors themselves are enriched with fine hinges and furniture.

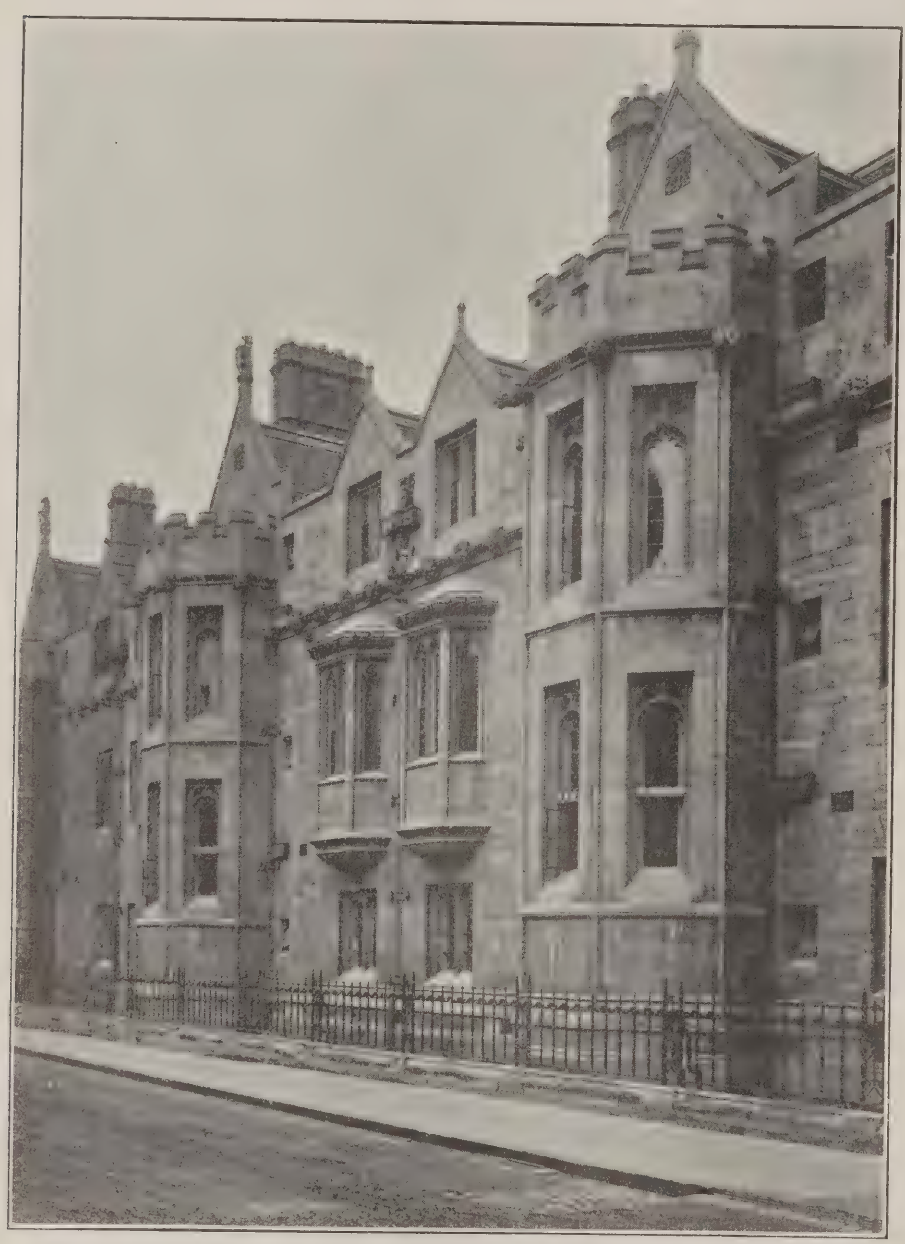


ENTRANCE TO NEW RADCLIFFE LIBRARY, OXFORD. T. G. JACKSON, R.A., ARCHITECT.

In designing the recent additions to St. John's College towards St. Giles Street Mr. E. Prioleau Warren has modestly followed the detail of Sir Gilbert Scott's work, even to the rather strange relieving arches over the windows and the lions' heads upon the wall; only in the carving is there variation, and in the end bay, where a gable and oriel window terminate the block. The architect has treated his predecessor's work with a studied reverence which has been entirely lacking in the case of the Museum additions to which reference has been made.

Street-widening at Carfax had become imperative, and the city authorities were careful that artistic considerations should not be ignored in the new frontage lines and elevations. The conscious aiming at picturesque effect is, if anything, too apparent; but after looking at the recently completed

Lloyd's Bank close by, one feels grateful that the Carfax improvements were confided to so able a man as Mr. Henry T. Hare.



NEW COLLEGE, OXFORD: NEW BUILDINGS TOWARDS HOLYWELL STREET.
BASIL CHAMPNEYS, M.A., ARCHITECT.

In many towns the erection of a Board school prefaces the depreciation of neighbouring property and the architectural decline of the locality; but this can hardly be the case at Oxford. Two new Board schools designed by Mr. Leonard Stokes lie west of Carfax. The Central Schools on Gloucester Green occupy a triangular site most happily; the various blocks group themselves charmingly from all points of view. The small mullioned windows towards the Green are those of the cloak and other subsidiary rooms, the classrooms being lit by large windows overlooking the playground. The walls are mainly of red bricks, and the roofs are covered with large thick yellow stone slabs. Over the main entrance are shallow carvings in the stone panelling illustrating King Alfred and St. Frideswide teaching boys and girls respectively. A school for girls in New Inn Hall Street is more formal in its plan; the building is recessed from the street by the depth of its end return wings, and a handsome cast-iron railing encloses the forecourt, which is below street level (see p. 6). Above the ground-floor classrooms is a boldly projecting cornice supported on shallow modillions. The skyline of the roof is pleasantly broken by a bell-turret.

Among other recent erections, but of less architectural interest, are the Corn Exchange and Fire Station in George Lane, a monument to fallen soldiers in the public garden in Queen Street, the Old White House Inn across Folly Bridge, and Holywell Mill on the Cherwell, rebuilt as a small residence with sluices below. Additions are being made which will carry Hertford College up to the Indian Institute and so eliminate the remnant of private property in Catherine Street. But there is a slackening in the extension of University Buildings; nor is this surprising when it is considered what great additions have been made to the colleges during the past half century and the recent extension of the University system in other cities. The new work at Magdalen, New and St. John's Colleges is probably equal to any of its kind that preceded it; and it may be hoped that, as a result of Mr. Rhodes's bequest, Oriel will soon put as fine a front upon the High as Brasenose commenced in 1888.

We know that across the Atlantic, in California and elsewhere, avenues of University buildings are under contemplation, and even in a course of formation; that our cousins are attempting to do in a century what we have accomplished in ten. No one can begrudge this multiplication of beautiful groups of buildings, but it is pleasant to think that our own ancient centres of education show no signs of that stagnation which is death.

CONTINENTAL NEWS AND OPINIONS.

[The following extracts have been translated for THE BUILDERS' JOURNAL from the German, French, Italian and Russian press.]

The Simplon Tunnel Exhibition.

The Italians will celebrate the opening of the Simplon Tunnel in the year 1905 by holding an exhibition in Milan, and they are inviting sketches and plans for the buildings and general arrangement to be sent in by March 31st next. Two prizes are offered for the first and second best designs—5,000 lire the one and 2,000 lire the other. All further particulars may be had on application to the Exhibition Committee of the Milan Chamber of Commerce.

Laaser Marble.

The "Deutsche Bauzeitung," writing of Laaser marble, says that for open building work it is gaining greatly in favour. It has no sand-flaws, but it has a fine yellow-white ground colour, in which respect it is uniform. It is large, crystalline, like the Lichnitas of Paros, resists the weather, and in the course of time takes on a fine ivory-toned incrustation. Compared with the Italian marble the colour becomes warmer year by year. Its fault is that large pieces show certain dark cloudy spots. Work done in Laaser marble will stand in the open for 800 years without showing the slightest sign of weathering. Large monuments can be produced in it which had hitherto, on account of their size, to be produced in bronze. For monuments, marble lining, stairs and tombstones there is scarcely a marble existing that weathers so well as Laaser marble.

An Armoured Concrete Bridge.

The "Deutsche Bauzeitung" gives a detailed description, with illustrations, of a bridge in armoured concrete that has been carried over a railway in the neighbourhood of Pommeron, on the Coblenz-Trier line. It replaces an old wooden bridge and has a clear span of 17 metres 20 centimetres.

Armed Cement.

The important advance that has been made in the use of armed cement in France for building purposes can be gathered from the yearly statement of work executed on the most popular system in that country—the Hennebique. The value of the work done on that principle has risen from 0·16 million francs in 1892 to 29 millions in 1900, and the number of workmen engaged in the business has risen in the same time from 70 to 9,800.—(From "Stahl u. Eisen.")

Railway Sleepers in Armed Cement.

The Italian paper, the "Genio Civil," says that railway sleepers in armed cement have been on trial in Italy for a long time, and have borne the trial with complete success. They are likely to be generally adopted. The bottom of these sleepers is somewhat broader than the top.

A Curious Instance of Endomorphism.

A letter from M. Lacrois says that certain cases of endomorphism have been observed at S. Pierre. These have been particularly found in the ruins of an iron merchant's establishment in the town. The building had collapsed, engulfing in its ruins a large quantity of iron goods and combustible material of various kinds. Eight days after the disaster the ruins were still smoking. Investigation there discovered a compact rocky mass on the spot of the old warehouse. It is a black silicated rock in which are embedded chains, grids, bars, wire, masses of nails, vices and numerous other articles. They are not fused, but are more or less transformed into black crystalline oxide and have preserved their shapes. Where the silicated rock stops, there are stalactites in all the cavities, particularly across or along the chains. On the edges of this mass there are more or less fused building stones. ("Revue Industrielle.")

Underestimated.

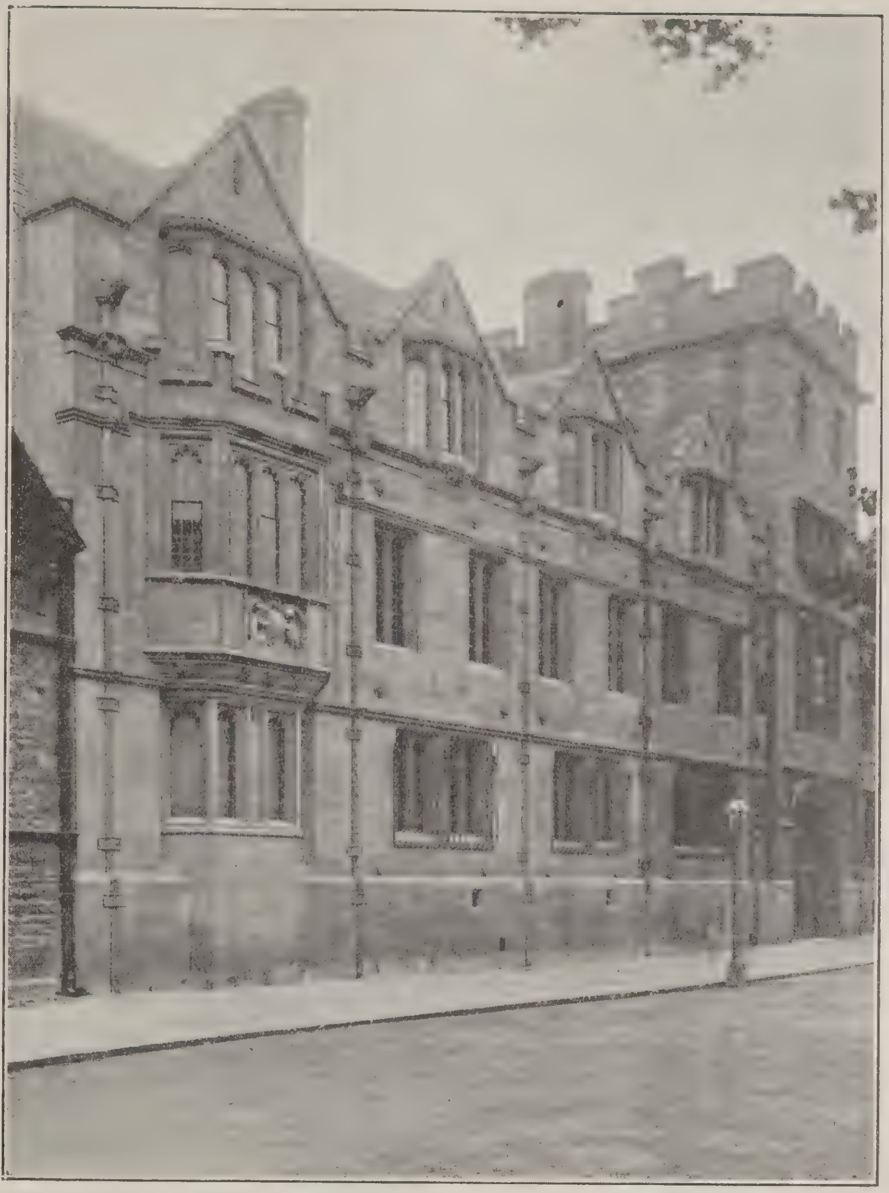
According to the "Schweitzerische Bauzeitung" a serious mistake has been made in the estimates for the Basel council-chamber, which were originally put at one million and thirty thousand francs. A few days ago the ever-deeply-interested community witnessed the voting of the latest of several extras amounting to 486,000 francs, which makes the total cost up to date 2,294,329 francs.

A Judicial Award to a Belgian Architect.

"L'Architecture Moderne" relates that a Brussels tribunal has awarded to an architect the sum of fifty thousand francs for his services in connection with the plans of an Ostend Hotel estimated to cost 4,000,000 francs. He claimed 80,000 francs and had been offered 25,000 francs. The court took into account not only the proportions of the proposed building, but also the high reputation of the architect. "L'Architecture Moderne" says that such a sum, even if it is only 1·25 per cent. of the estimated cost, is far in excess of any fee ever awarded to a French architect for a building that had not been constructed, as was the case here.

Cement and Stucco Facing.

The "Deutsche Bauzeitung" calls attention to a special feature in connection with Munich buildings, which has excited the admiration of many German architects who have visited the town in order to take note of its appearance. It is the special coating of plaster and its application which so distinguishes the buildings of the Munich of to-day, and this has led the writer who describes it to give a history of cement and plaster from the days of the Greeks and Romans. The Romans, he says, generally applied three layers of lime and sand mortar, and on the top of this they added a coating of marble-dust wash. The total thickness would be from 1 to 2 centimetres. The stucco that came into fashion consisted of a mixture of lime and gypsum, with the addition of marble-dust. It was common with the Greeks and the Romans, in the earliest Christian buildings, and was in use amongst the Mohammedans since the year 700, with the French since the year 1000, and with the Germans since the year 1100. Its use decreased considerably in the Middle Ages, but increased with the Renaissance. He traces the story of cement from century to century, showing the different applications for inside and outside work, noting, however, the result of carelessness in its use in the form of the cracks which admit moisture, especially in outside walls, and which of course become great rents through the action of frost. He gives particular instructions as to the making and application of plaster. It is important in applying stucco not to put it upon an existing stucco surface, but always on the naked wall, after carefully scraping it and cleaning out the joints.



ST. JOHN'S COLLEGE, OXFORD: NEW FRONT TOWARDS ST. GILES STREET.
E. P. WARREN, ARCHITECT.

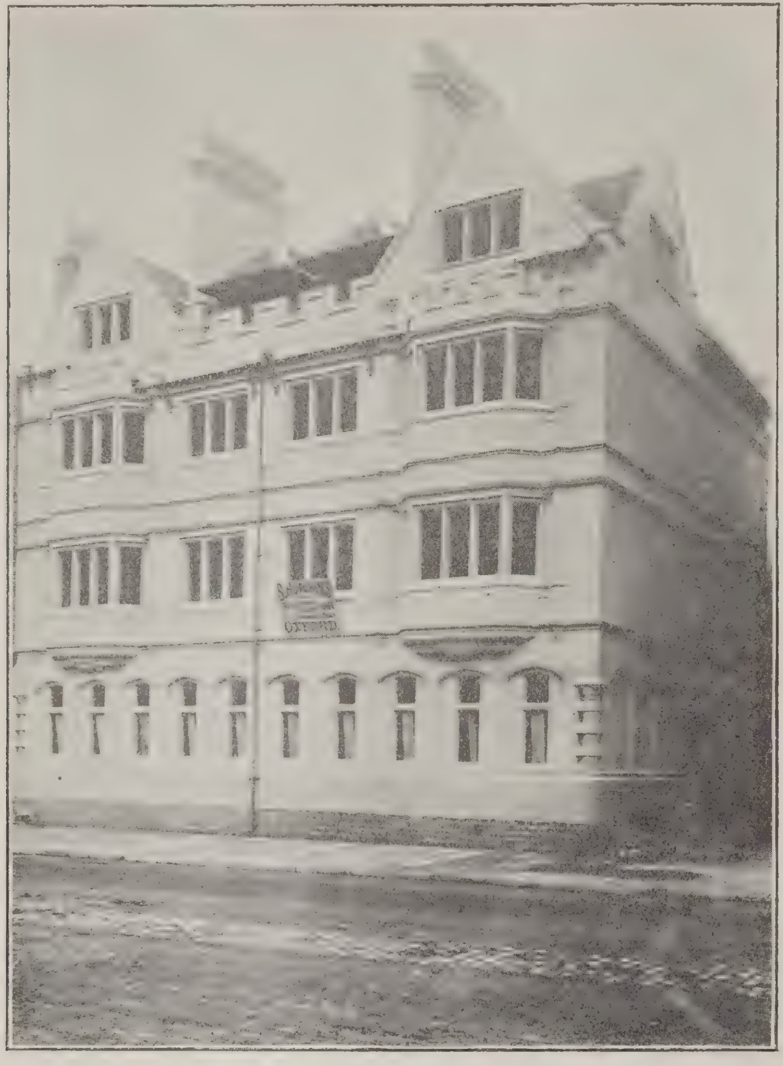
NEW COLLEGE, OXFORD: UNDER THE NORTH OWER. BASIL CHAMPNEYS, M.A., ARCHITECT.

Japanese House-Building.

Mr. F. Baltzar, who has been attached to the Japanese Imperial Railway Service for some time, specially deputed to that work by the Imperial German Government, has felt compelled to examine carefully the question of Japanese architecture, and he forwards the results of his very interesting investigations to the "Zeitschrift fur Bauwesen," which publishes the same in its last issue with numerous instructive and most interesting illustrations. *Inter alia*, he says, the first impression of the Japanese house on the foreigner in the land of the "Rising Sun," from a superficial observation, is one of smallness, unimportance and unattractiveness. In that country wooden houses play by far the largest part. The small solid-clay or stone house is mostly used for shops or stores, and, as far as dwellings are concerned, almost entirely for the wealthy. As a rule each Japanese family will occupy a separate house, and the average number of occupants of a house in the capital town, Tokio, is within a fraction of five; and the writer adds in parentheses, "This compares with twenty-nine in Germany." In the open country, on the other hand, the average number of occupants is a little higher. He then gives a table to show the number of houses and the relative number of inhabitants per house for several Japanese towns, and again for the whole of Japan, in the year 1898, as follows:—

	Population.	No. of Houses.	No. per House.
Tokio - -	1,425,336	303,791	4·7
Kioto - -	337,461	68,339	5 2
Osaka - -	811,855	153,772	5·3
All Japan - -	45,149,587	7,056,038	5·4

Both in the towns and in the country the single-family house and the single-storey house prevail. In large towns like Tokio, Osaka, Nayoga and Kioto there are several tenement-houses to accommodate a number of families; but these have only come into existence since the Restoration in 1868, and are still very exceptional.



UNIVERSITY HALL, OXFORD: NEW FRONT TOWARDS THE HIGH STREET. H. W. MOORE, ARCHITECT.

A Japanese town as a whole exhibits a large number of single houses. As a matter of fact, a Japanese house, seen from the outside, presents a dirty grey colour and a very soiled appearance (excepting when it is new), for it is always left unpainted and the bare woodwork is exposed to the sun, dust and rain. To the non-inquisitive eye one house appears very much like another, and one seeks in vain for the variety that strikes the eye with so much satisfaction in a European town. The low, common one-storey house made of wood, without attics or cellars, has no chimney to mark a break in the roof-line, in contrast with the appearance of European houses. The glazed windows and doors to which we are accustomed in Europe are also wanting. In fact, the whole general appearance seems to throw discouragement on the architectural idea. Still the roof is an exception. When this is not made of straw or shingle, but with tiles, it produces with the aid of the bright white cement with which the tiles are joined a very striking relief. The effect is pleasing to the eye, even more so than the appearance of our own roofs at home. The structural peculiarities of the Japanese house are very interesting, and claim close attention on the part of the student of architecture.

To Illustrate Belgian Architecture.

The King of the Belgians has given instructions to extend and construct a façade of the Congo Museum at Tervueren, Belgium, on account of the rapid development of the institution, and he is anxious that the building should be typical of contemporary Belgian architecture.

Bricks and Mortar.

Aphorism for the Week.

There can be no Art without encouragement. On the lonely islands of the Pacific Mozart and Raphael would have been mere clodhoppers. —ROBERT SCHUMANN.

Exeter Cathedral: Proposed Removal of the West Window. IT is proposed to take down the glass in the great west window of Exeter Cathedral and replace it with other glass as a memorial to the late Archbishop Temple. Mr. Stuart A. Moore, F.S.A., greatly resents this proposal. The glass, he says, "is the best work of William Peckitt, of York, the glass painter, who did his best with the materials at his hand to keep alive the art of glass-painting in England. In doing so he did what scarcely any modern glass-painters have done—that is, he considered the necessities of the lighting of the building and subordinated his window to the intention and design of the original architect by erecting a light-giving, but decorative, window which allows the full effect of the beautiful groining and decorated columns of the cathedral to be seen. . . . . When the cathedral was restored by Sir Gilbert Scott the authorities nearly persuaded him to remove the great east window with its ancient glass, which is one of the glories of the place, and to replace it by a wheel window of his own design; but I showed him the entry in the records which ordered the erection of the perpendicular window, and showed its date, and he thereupon declared that nothing should induce him to alter a piece of dated work, and the window was saved. The Freeman memorial window in the south chapel would have been swept away but for the protests of the late Archdeacon Freeman and myself. It is the most perfect piece of decorated glass in England. I found in a loft above the minstrels' gallery almost the whole of one of the original clearstory windows of beautiful grisaille work and ample remains to ensure its perfect restoration. I offered to restore it on condition that I might employ my own glass-painter, but this was refused, and I now hear that the window has disappeared altogether. I have vainly endeavoured to get the authorities to have drawings made of the original designs of the side windows in the choir but without success, and very unsuitable windows have been erected in their place. To take out the glass of the west window would be the worst possible way of erecting a memorial to Archbishop Temple. . . . ." Mr. Lewis Day, in his book on stained and painted glass, writing of the low level of the seventeenth-century glass, says: "That it could fall still lower was shown, for example, by Peckitt, of York, who is responsible for the glass on the north side of New College Chapel, Oxford."

A Horse's Tail. Mr. D. S. MACCOLL and Mr. Spielmann, the two art critics who have been the centres of the respective parties in the Wellington Memorial controversy, have made some caustic remarks about each other's opinions. Mr. Spielmann threw doubts on the authenticity of Stevens's model. He then gave as "authoritative information" the fact that the model was the work of Stevens's own hands, "except the tail, which Mr. James Gamble, his assistant, put into plaster, and Mr. Keats, Stevens's handy man, fixed on. This is the portion which Mr. MacColl claimed to be a superb feature." But Mr. MacColl upsets that assertion. He says: "The tail of the full-sized model is obviously a mere stump, and not Stevens's; and it was pointed out that this was one of the imperfect parts, but could be supplied, fortunately, from the sketch-model at Kensington, with which Mr. Spielmann has yet, perhaps, to make acquaintance. In that sketch-model the treatment of the tail, as all who know it will admit, is, indeed, superb." Mr. Gamble himself says: "No, no. Charge Mr. Tweed with the rectifying of the tail, which was the only part left in clay unfinished, and with supervising power to see that the bronze work from the existing model of the mounted horse is sound and faithful in all respects. Beyond this there is nothing to be done."

Corner Sites. A MEETING of the Associate Section of the Edinburgh Architectural Association was held on Wednesday last, Mr. J. Douglas Trail occupying the chair. Mr. J. A. Arnott gave some "Notes on the Treatment of Corner Sites." In arranging the plan a considerable amount of trouble was sometimes experienced in obtaining a sufficient amount of light to a number of rooms, &c., and also in giving pleasing shapes to many apartments. The difficulties associated with the elevation were due partly to the necessity for a truncation of the angle, and partly to the opportunity offered for introducing a prominent feature in the design. One difficulty was to treat the angle so that the lack of basement to the design might not be too apparent—this might be done by abstaining from giving to the corner a pronounced vertical appearance. The horizontal mouldings would be continued round the corner. The lecturer showed slides illustrating his remarks, and pointed out that the turret roof was a useful finish in that it concealed any awkward intersections of the main roof.

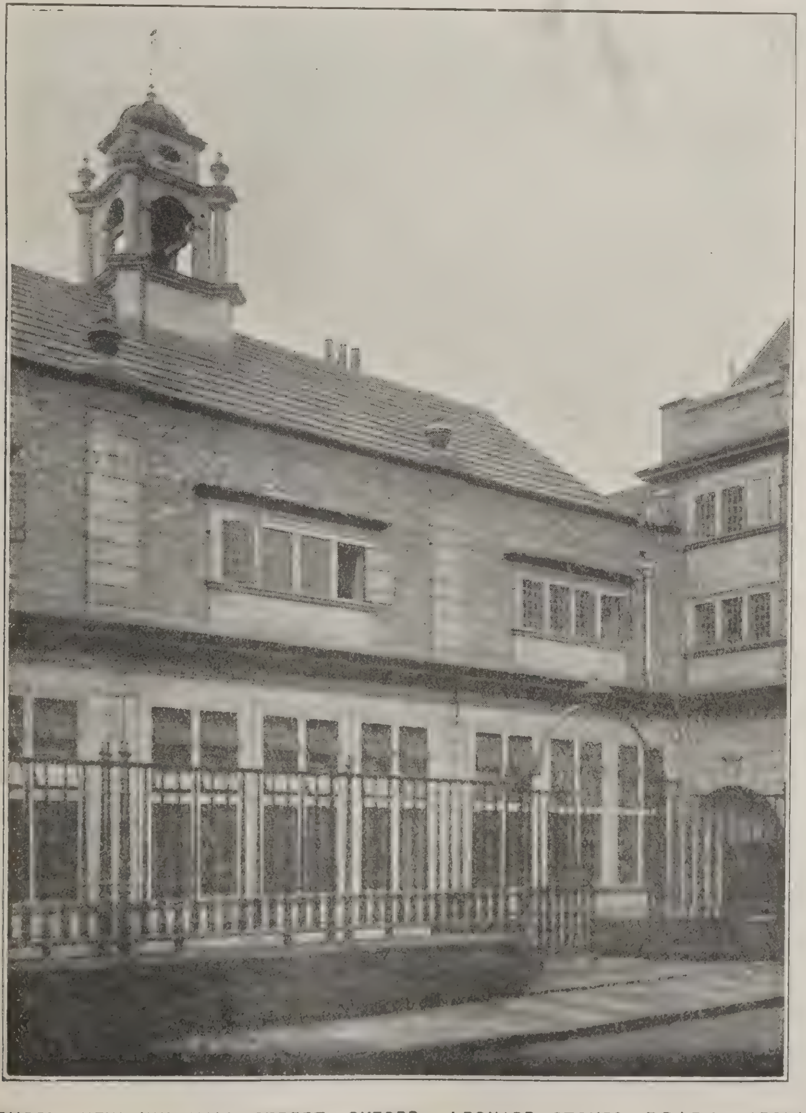
LEEDS AND YORKSHIRE ARCHITECTS.

Annual Dinner.

THE annual dinner of the Leeds and Yorkshire Architectural Society was held on Thursday last. The president (Mr. Butler Wilson) occupied the chair. Dr. Bodington gave the toast of "The Royal Institute of British Architects." Mr. John Belcher, A.R.A., in replying said that the Institute might be said to be the representative body of British architects throughout the Empire. The more thoroughly architects co-operated with the Institute in maintaining the status and integrity of the profession the more effectually would its status be safeguarded and the art be advanced. There were, he continued, other things which conduced to health than a proper system of drainage, and he thought the authorities should not only take precautions against contamination through the senses of smell, taste and feeling, but should also be careful that nothing be received through the eye or ear which was corrupt, coarse or vicious. There was much to be said in favour of a Minister of Fine Art, under whom some general supervision might be wisely exercised over all that was to be presented to the public eye. "In the meantime we must, as architects, remember our responsibilities. We must protect and lead the public taste, and we must resist as strongly as possible such insidious, enervating and unwholesome forces as are affected by what are known abroad as *les nouveaux*, and we must endeavour to encourage pure, simple and manly methods which belong to a healthy British tradition."

In responding to the toast of "The Houses of Parliament" Mr. Rowland Barran, M.P., said that though painters' water-colours might fade after 150 years, and oil paintings be limited to a few centuries, there was in architecture an art and a science which lasted almost as long as the solid fabric of the earth itself. There were to-day buildings which dated back beyond all written history. In that there seemed to be room for a natural envy. He did not mean it to be supposed by that that a building put up, say, in Leeds, under the building by-laws, and complying with all their specifications, was likely to last till eternity. God forbid that many of them should do anything of the kind. "In a city like Leeds," Mr. Barran continued, "questions of utility must take the first place, and it is, therefore, a very difficult thing for an architect to erect any building which can correctly be described as belonging to a high class of architecture, or to claim any amount of beauty. We have in Leeds, however, a growing number of buildings which have some claim to art. I often think that in these smoke-begrimed cities, if we could pay rather less attention to the ornamentation of our buildings and more attention to the proportions, we should achieve more architectural success than we do at the present time."

The Mayor of Harrogate (Mr. Horace Milling) gave the toast of the Society, and remarked that it was one of the oldest provincial societies in existence, having been founded in 1877. He was pleased to see they were also a prosperous body, as during the past year their income exceeded their expenditure by £96, while their membership had increased from 118 in 1901 to 124 in 1902 and 137 in the present year. The President, in responding, said the area covered by the Society extended from Teesdale in the north to Huddersfield in the south, from a considerable distance in the west to Flamborough in the east. They had instituted a system of education for the associates of their Society, and they had ventured to name it a School of Architecture. Although at present it might exist only in name, they hoped in the near future to make it a reality. They hoped to make Leeds prominent as the metropolis of the North so far as architecture was concerned. He regretted that the old universities, such as Oxford, which owed so much to architecture, offered no rewards to the architectural student, but he hoped the time was not far distant when a degree of architecture would be offered by these ancient seats of learning. In the meantime it had been left to the newer universities, such as the Victoria University, to take the first step, and he hoped before long that at the Yorkshire College they would have a chair of architecture.



GIRLS' SCHOOL, NEW INN HALL STREET OXFORD. LEONARD STOKES, F.R.I.B.A., ARCHITECT.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Public Stands.

J. L. D. writes: "Kindly give a detail section with dimensions for a twenty-tier timber spectators' stand to a ball court."

See an article on the Construction of Stands in our issues for June 9th and 16th, 1897.

Drawing Entasis on Columns.

SALFORD.—G. E. C. writes: "Which is the most accurate method of getting the entasis on a column 7ft. 9in. long with the beam and slot?"

See p. 393 of our issue for January 24th, 1900.

Fixtures in Houses.

LICHFIELD.—H. C. writes: "I have fixed an oak mantelpiece and overmantel in a house (not the occupier's property), and I want to know if it can be removed if desired at any time. Is it a 'tenant's fixture'? It has a framed ground of deal, screwed to plugs, and the oak joinery screwed to the ground. I have been told that only the oak could be removed."

Even the framed ground, being screwed and not railed or otherwise permanently attached to the freehold, is a tenant's fixture and can be removed. This is my belief, but if there be doubt a solicitor should be consulted. G. A. T. M.

Slating.

SWANSEA.—J. R. writes: "(1) What are the characteristics of the Cumberland and Westmorland, American and Belgium green slates? (2) How does the cost per square on roof vary when the size is entirely Countess, and how does it differ when laid in diminishing courses? (3) Have Belgian slates been extensively used for church work in Britain, and have they proved satisfactory?"

(1) See the "Slater" section in "Specification, No. 6." (2) The cost per square when laid to a 3in. lap is about 1s. less for Duchesses than Countesses and 3s. less for Ladies. There is practically no difference, however, in cost when the price of the different sized slates is taken into consideration. The extra labour entailed in laying diminishing courses works out at about 10s. per. square. (3) Belgian slates have only been used to a small extent in this country, and have proved very unsatisfactory.

Lead on Oak.

J. M. C. writes: "Have you ever known lead casing (sheet or pipe) to dissolve to a powder after being in contact with oak?"

We have never heard of this occurring, and do not see how it could happen.

Study of Old Buildings.

LINCOLN. — LUDA writes: "Could you oblige me by giving me some advice on the study of famous buildings (as Lincoln Cathedral)?"

See Mr. W. H. Bidlake's paper on the study and delineation of old buildings, read before the Architectural Association on December 19th, 1902, and reported in our issue for December 24th. Study also "A History of the Gothic Art in England," by Edward S. Prior (George Bell & Sons, York Street, Covent Garden, W.C.), and Reginald Blomfield's "Short History of Renaissance Architecture in England."

Extras.

ABERGWYNFY.—CYMRO writes: "(1) According to the contract plans for four houses, the depth of the foundations were shown about 1ft. below the surface. The ground being 'boggy,' I dug down another 3ft. to reach the solid ground. Can I claim for the extra labour and materials? (2) After building three pine-ends (party-walls) on the second floor in 4½in. brickwork, 27ft. long by 5ft. high, the architect ordered me to pull the work down again and rebuild the ends in stonework 21in. thick. Can I claim for the loss of labour and materials by pulling the work down, and the extra labour and materials by building the walls in stonework? The contract form was issued by the R.I.B.A. and master-builders."

Upon the facts *as stated* in your enquiry we are of opinion that you can claim for both works.

Sanitary Walling.

POLLOKSHIELDS.—W. F. writes: "What are the relative merits of the following walls for dwelling-house purposes—particularly from strength, sanitary and health points of view, also as to heat and cold:—(1) 14in. solid good common brick, built in lime and plastered inside, the outside cement rough-cast and rendered quite waterproof with paint or other coating; (2) a similar wall, without waterproof coat on outside, but having the inside of wall battened and lathed; (3) hollow wall, 9in. by 4½in. walls, tied together with iron ties plastered inside, and cement rough-cast outside (no paint); (4) thin wall, outside as above. All walls to have a damp-proof course."

A waterproof wall is not considered so healthy as a slightly porous wall, on account of the passage of air being prevented and vitiated air being compelled to stagnate within it; on the other hand, a porous but damp wall is cold and not healthy. A hollow wall, with the thick portion inside to carry the weight of floors and roof, and thin part outside to act as a screen against the weather, is decidedly the best of the varieties mentioned, the cavity being properly ventilated. The inner wall must always be the same thickness, as if there were no outer screen. HENRY ADAMS.

Civil Engineers' Examination.

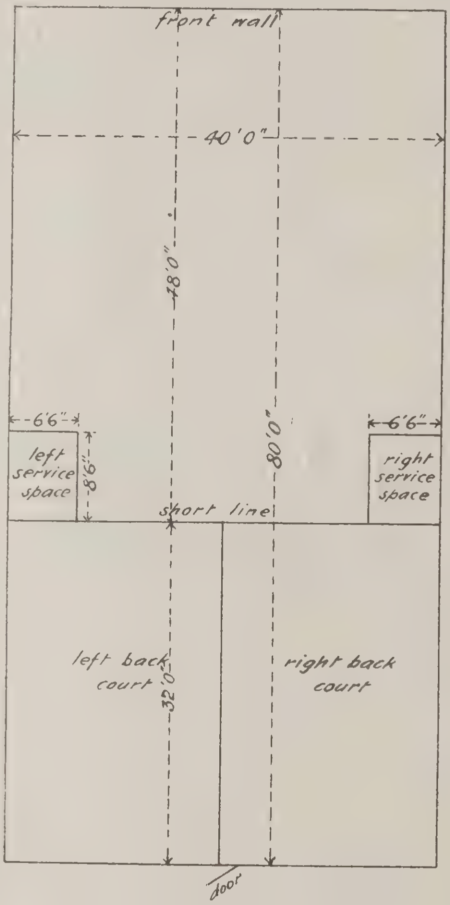
HALIFAX.—UNCERTAIN writes: "Can one enter for the Associate Membership Examination, Institution of Civil Engineers, after one is twenty-one years of age; or is it necessary to wait till one is twenty-five years old? If one is in a civil engineer's office where the principals are not members of the above Institution, will it prevent one from going in for the studentship or the Associate examinations; if so, how?"

The Associate Membership Examination of the Institution of Civil Engineers cannot be taken until the candidate is twenty-five years of age. The candidate need not necessarily be in the office of a member of the Institution so long as he knows some member to stand sponsor for him, but he must produce evidence of a liberal education and professional training as a civil engineer. Application should be made to the secretary of the Institution, 25, Great George Street, S.W., for particulars of the examination and form of application. HENRY ADAMS.

Racquet Courts.

MARKET DRAYTON.—P. C. writes: "Can you give me the names of any books, articles or any other information dealing with the building of racquet courts, and particularly of squash courts?"

We know of no articles or books dealing with the building of racquet courts; but the following information should prove sufficient for requirements. The materials to be used in construction, and especially in that of the roof, must depend largely upon the amount of allowable expenditure and local facilities. From the above plan it will be seen that the dimensions of a "close" court (open courts are now almost obsolete) are 80ft. by 40ft., the walls having a height of 40ft. The *back* wall may be broken at 14ft. above ground level by a gallery for the spectators, umpire and marker. The whole building is roofed, and well provided with skylights or lanterns protected on the inside by wirework to prevent damage from the balls. The walls must all be rendered perfectly smooth and hard with fine cement, so that the balls may rebound evenly, and should be painted black. The best material for the floor is asphalt. In the centre of the back wall, beneath the gallery, is the entrance door, which must be perfectly fitted and left flush with the wall on the inside. On the front wall are drawn two horizontal lines, one 2ft. 3in. above floor level, the other 7ft. 9in. above, the latter being termed the "cut" line. The wall-space from floor to level of lower line is covered with hollow boarding, this serving as a sounding board and enabling the players to know when it is struck by the ball. The sketch given shows the method of floor divisions by lines into the necessary spaces and courts. In India, it may be added, the walls are usually painted white for the sake of coolness, and black balls are used. Here the colours are reversed. A court of the dimensions given above is suitable for four-handed matches; for single matches one of 60ft. by 30ft. is sufficient.



PLAN OF RACQUET COURT.

Licences for making Valuations.

BILSTON.—ENQUIRER writes: "I should be glad to have a reply to the following enquiry. I am called in to survey or value a small property (about £100 value. If I attach a present value, what fee or stamp would be necessary, and is a license as appraiser required? The property really, on the church's sede, consists of a mortgage on a cottage. The church authorities have no ownership of the cottage."

The Stamp Act exempts "appraisements or valuations made for and for the information of one party only, and not in any manner obligatory as between parties either by agreement or operation of the law." Any valuer may therefore make a valuation without holding a licence if it is for the use of his client individually, notwithstanding the fact that the valuation may be subsequently used as the basis of an agreement between parties. The essence of the matter is that the valuation must not be an award made with the object of binding two parties unless properly drawn by a licensed valuer and duly stamped. If the valuation is to be binding between parties the valuer must hold an appraiser's licence costing £2, and renewable on July 5th. The award must be in writing, showing the amount, and must be stamped within fourteen days of making under a penalty of £50, and any person paying for one not properly stamped is liable to a fine of £20. The stamp duties on appraisements are:—

	£	£	s.	d.
Not exceeding	5	0	0	3
,, ,,	10	0	0	6
,, ,,	20	0	1	0
,, ,,	30	0	1	6
,, ,,	50	0	2	6
,, ,,	100	0	5	0
,, ,,	200	0	10	0
,, ,,	500	0	15	0
Above	500	1	0	0
On award the same				
but not exceeding	750	1	0	0
Do. do.	1,000	1	5	0
Above	1,000	1	15	0

The cost of stamps is generally divided between the parties. For the fees payable to surveyors and valuers for making valuations see "Specification, No. 5," p. 51.

HENRY ADAMS.

Power of Rural Council to Enforce the Provision of Eaves-Gutters.

WICKWAR.—J. S. B. writes: "Has a rural district council power under the Public Health Act of 1875 to demand the owners of cottages in a country district to put eaves-gutters to roofs which have never previously been spouted, and can they make the owners repair the roofs and the windows of the cottages? I may say I have written to the sanitary inspector from whom the notices came, and he refers me to section 94 of the Act."

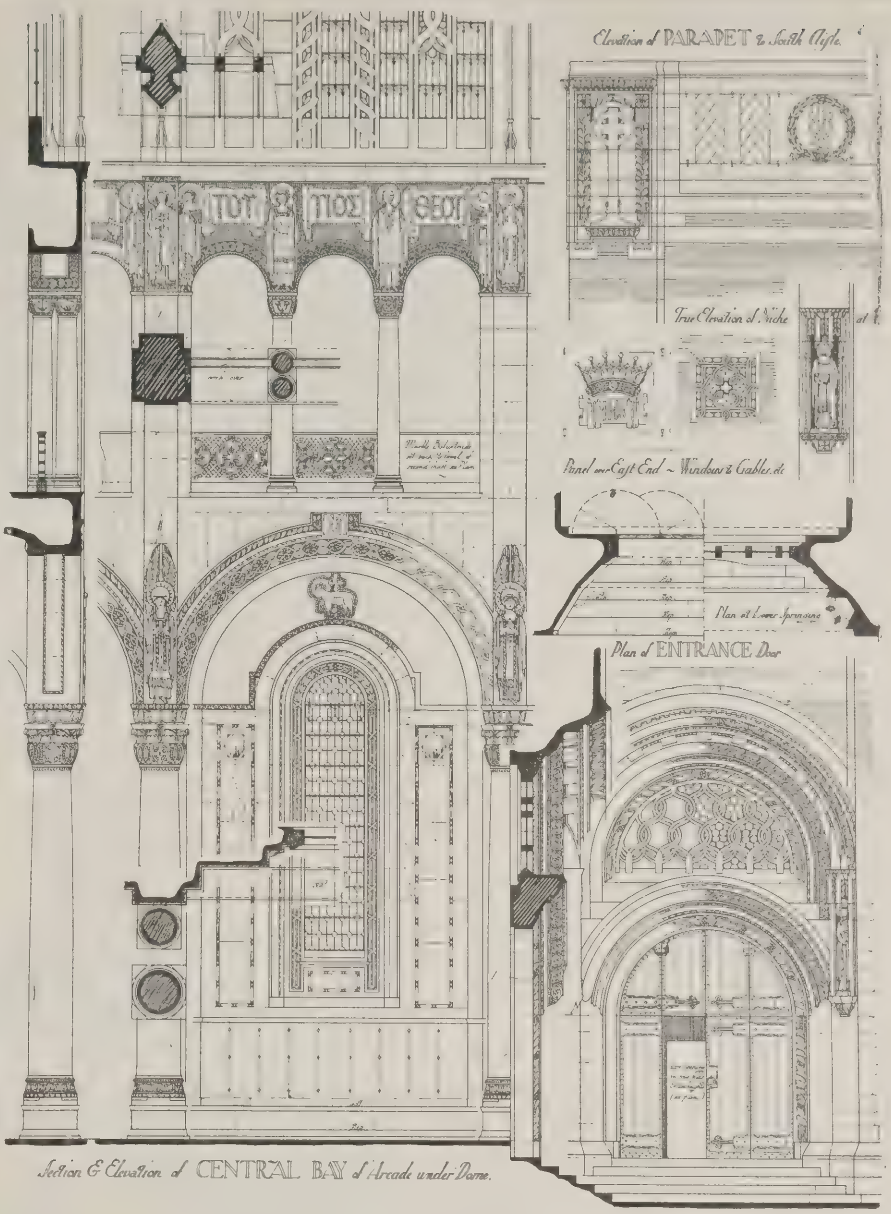
Yes, if the local authority is satisfied that a nuisance is caused by reason of the structural deficiencies or defective construction of a building, they may call upon the owner to make good such deficiencies or defects in order to abate the nuisance thus caused. In the case of buildings which are absolutely unfit for human habitation, the abatement of the nuisance may even involve the pulling down of the premises. T. E. C.

Law Cases.

By-laws.—At the Moot Hall, Newcastle, Robert Harbottle, builder, Walker, was summoned for committing a breach of the by-laws of the Walker Urban District Council. It appeared that Mr. Harbottle, who was carrying out some building operations at Walker, had carried one of his houses to a greater height than the adjoining buildings, contrary to the plans he deposited with the council, and that he had contravened the by-laws by building a portion of the wall to a thickness of 4½in., while the by-law demanded that it should be 9in. thick. --The Bench was satisfied that a breach of the by-laws had been committed, and imposed a fine of £5.

District Surveyor's Fees. — A Chelsea builder named Frederick Robertson was recently summoned at the Westminster Police Court by Mr. W. A. Large, district surveyor for the Belgrave and Pimlico division of St. George's, Hanover Square, for £2 17s. 6d.—fees for surveying drainage work to a building in Grosvenor Gardens.—The defendant said the work had nothing whatever to do with the district surveyor. It was done under the Metropolis Management Act under the purview of the sanitary inspector. All it amounted to was cutting a small hole through a wall for a 4in. pipe to go through. —Mr. Large said another metropolitan magistrate had decided a very similar case in favour of the surveyors. He should have to ask the court for a case.—The magistrate said he was in favour of the defendant, but if the complainant was going to appeal the sanitary inspector's order should be produced. In adjourning the proceedings for this document, he said the defendant would do well to consider whether it would not be much cheaper to pay the surveyor's fees than incur the heavy costs of counsel and solicitors in subsequent litigation.

Altering a Bay Window.—The case of *Wright* v. *Lawson* recently came before the Chancery Division of the High Court of Justice. This was an action by a lessor against a lessee upon a covenant contained in a lease of a house and shop in Fulham. On the first floor of the premises there was a bay window. On June 30th, 1900, the defendant was served with a notice on behalf of the London County Council, under the Building Acts, to take down or otherwise secure the brickwork of the external walls and bay window, so far as it was cracked, bulged, loose or otherwise defective; also to shore up the bay window and arch over the back door immediately. The defendant thereupon instructed his builder to comply with the notice, and the window was taken down; and it being impossible, owing to the house being old and badly built, to re-erect the window in the same way in which it was before without its being condemned as dangerous by the County Council, the defendant built a new window set back in the main wall of the house. The plaintiff by this action asked that the defendant might be ordered to restore the premises to the condition in which they were when the lease was granted by replacing the bay window. The evidence showed that practically a new bay window, such as would satisfy the requirements of the County Council, could only be erected by supporting it by two columns from the ground to the window; or at any rate that supports of a substantial character would be required. Mr. Justice Kekewich came to the conclusion that the defendant was not liable to replace the bay window, since it was impossible to do so consistently with the requirements of the London County Council. He did not think that erecting a new bay window supported by columns could be regarded as the repair of the old bay window. It would be erecting a new bay window of a totally different character, more permanent, better, and more satisfactory, and possessing those qualities because it was new. That appeared to bring the case precisely within the principle of *Lister* v. *Lane* (1893, 2 Q.B., 212). The defendant had been prevented by *vis major* in the shape of the London County Council from performing his covenant. There would be judgment for the defendant with costs.


Elevation of PARAPET & South Aisle
ΤΟΥ ΥΙΟΣ ΘΕΟΥ
True Elevation of Niche
Panel over East End ~ Windows & Gables, etc
Plan at Lower Springing
Plan of ENTRANCE Door
Section & Elevation of CENTRAL BAY of Arcade under Dome.

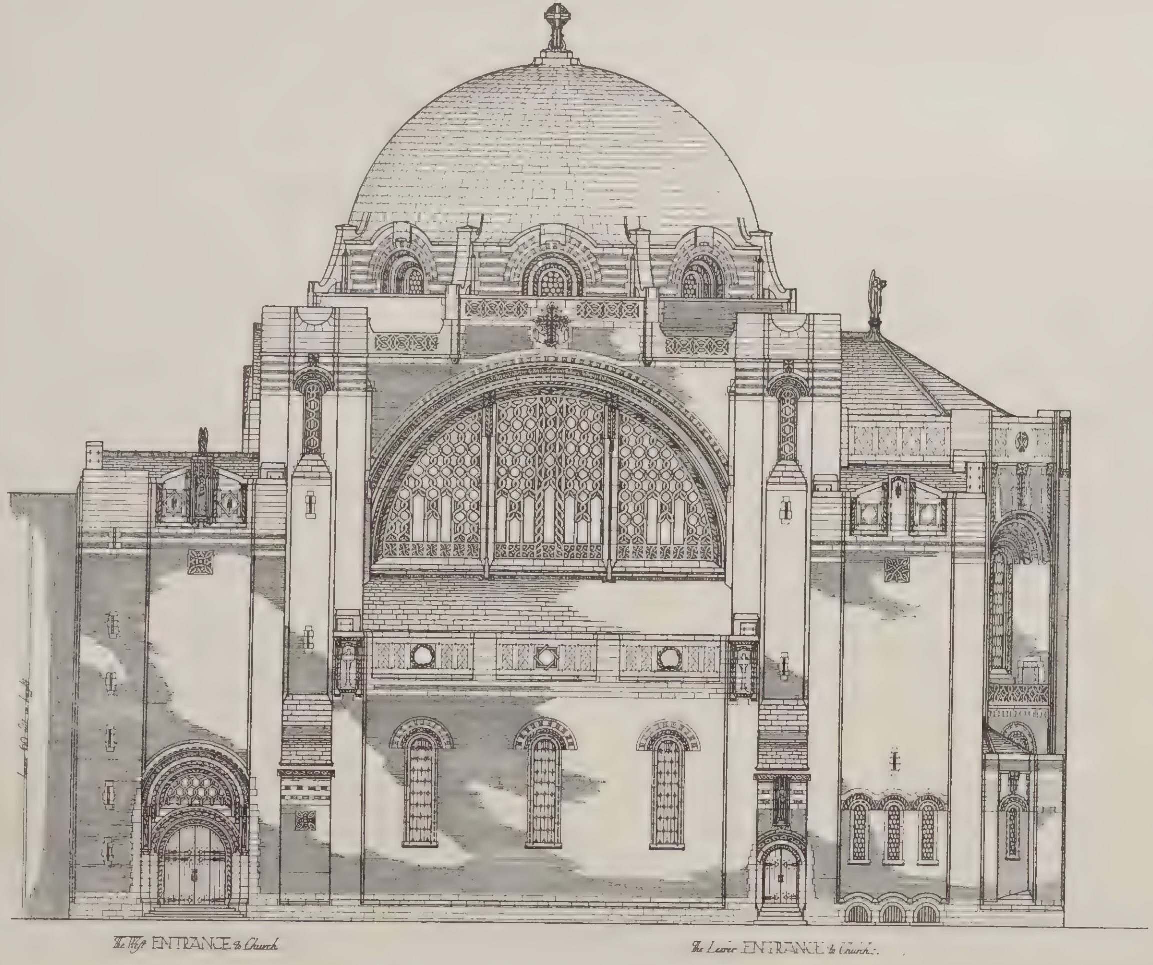
THE SOANE MEDALLION PRIZE DESIGN FOR A TOWN CHURCH. BY E. F. REYNOLDS.

RUSKIN DRAWINGS.

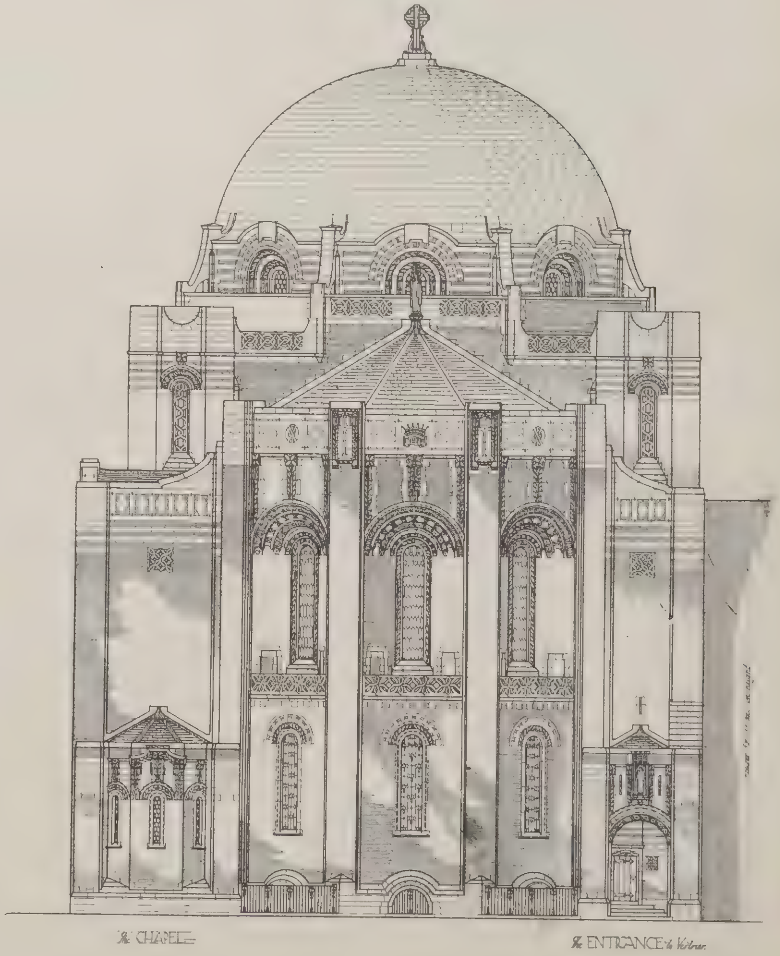
A MEETING of the Sheffield Society of Architects and Surveyors was held last week, when Mr Gill Parker, curator of the Ruskin Museum, gave a lecture on "Architectural Examples of North France and Italy, as shown by drawings in the Ruskin Museum." Mr. Parker explained that the many drawings in the museum were executed by Mr. Ruskin and the band of artists who worked under his direction on the Continent for the purpose of illustrating the fine work of the mediæval architects, sculptors and masons. Mr. Ruskin, forty years ago, saw the immediate necessity of these records being made, for in many instances decay and careless restoration were working sad havoc with that original work, which must have been always of the greatest import to anyone seriously interested in the arts of architecture and sculpture. Most of the drawings illustrated passages from Ruskin's writings, and not only appealed particularly to his students, but also to all who were familiar with his principal works on architecture—"The Stones of Venice" and "The Seven Lamps of Architecture."

Amongst the illustrations given were those of cathedrals and other edifices in some of the old towns in the north of France, where fine examples of the Gothic of the twelfth and thirteenth centuries had been fairly well preserved up to the time when the drawings were made, including Rouen, Chartes, Amiens, Auxerre, Abbeville and Laon. Attention was then directed to cities in the north of Italy, where Byzantine, Romanesque, Gothic and later styles of architecture might be studied.

Mr. Parker said it must be admitted that Ruskin and his artists had undoubtedly shown in this collection that architectural drawings could be made which were not only accurate, and in some instances included detail carried out to the most delicate minutiæ, but which were also artistically considered fine productions. They were precise, not generalised, yet artistic in the highest sense of the word, and had a beauty and charm entirely their own. The lecturer hoped those present would help in making the value of the collection still further known and appreciated.



The ELEVATION to the SOUTH



The ELEVATION to the EAST

THE SOANE MEDALLION PRIZE DESIGN FOR A TOWN CHURCH. BY E. F. REYNOLDS.

The brickwork to be built of bricks 9in. by 4½in. by 1½in. thick, of rough texture and varying in colour. The mortar joints to be ½in. thick, flush, and of white mortar. The stone to be generally of light colour, white varying to grey-green, and set with same thickness of mortar-joints as the brickwork. The slates to be laid random, graduated in size, rough in texture and varying in colour

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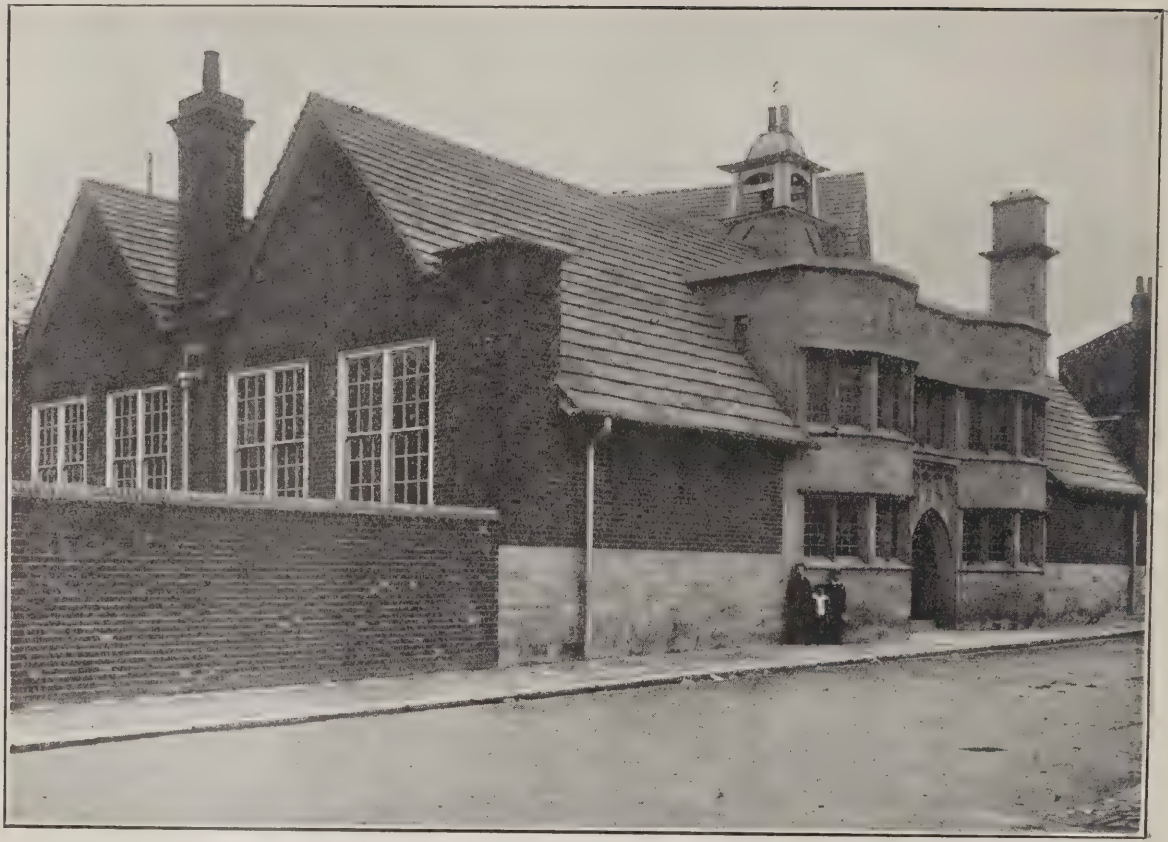
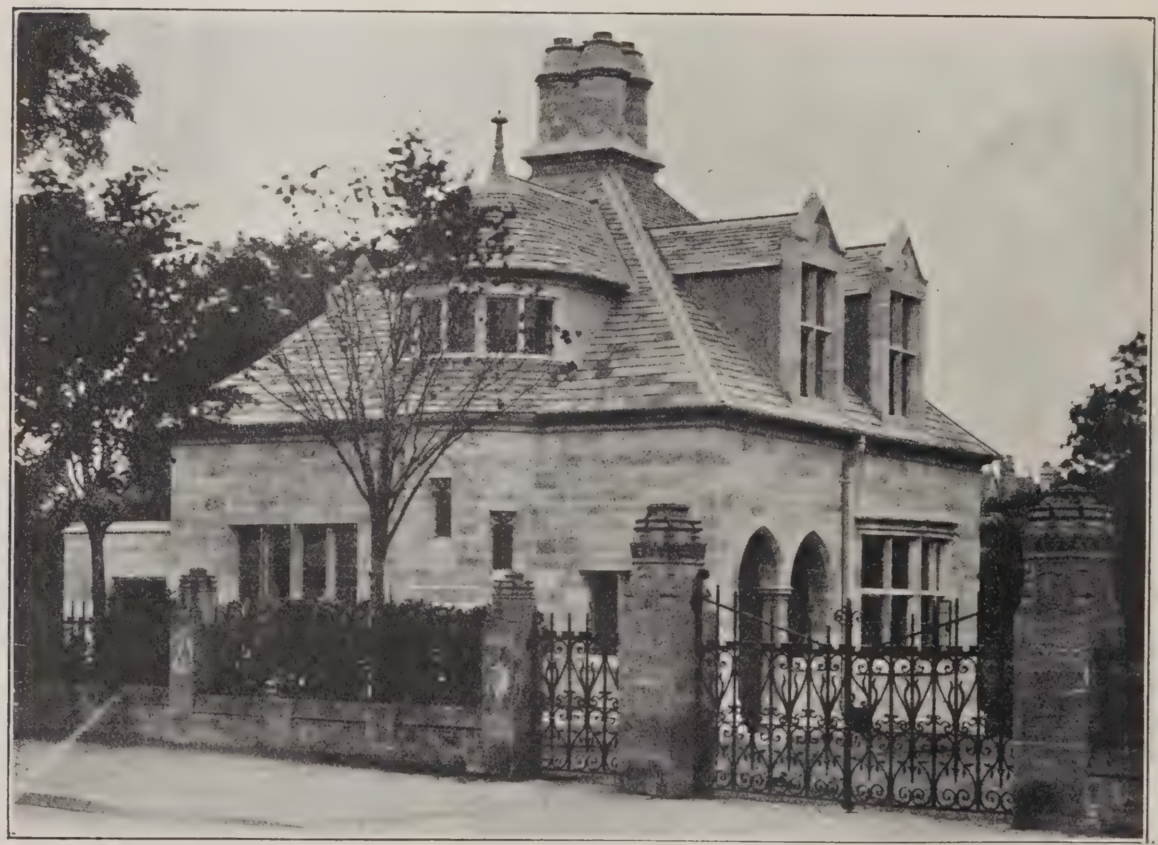


THE CENTRAL SCHOOLS, GLOUCESTER GREEN, OXFORD. LEONARD STOKES, ARCHITECT.



NEW LODGE, MANSFIELD COLLEGE, OXFORD. BASIL CHAMPNEYS, ARCHITECT.

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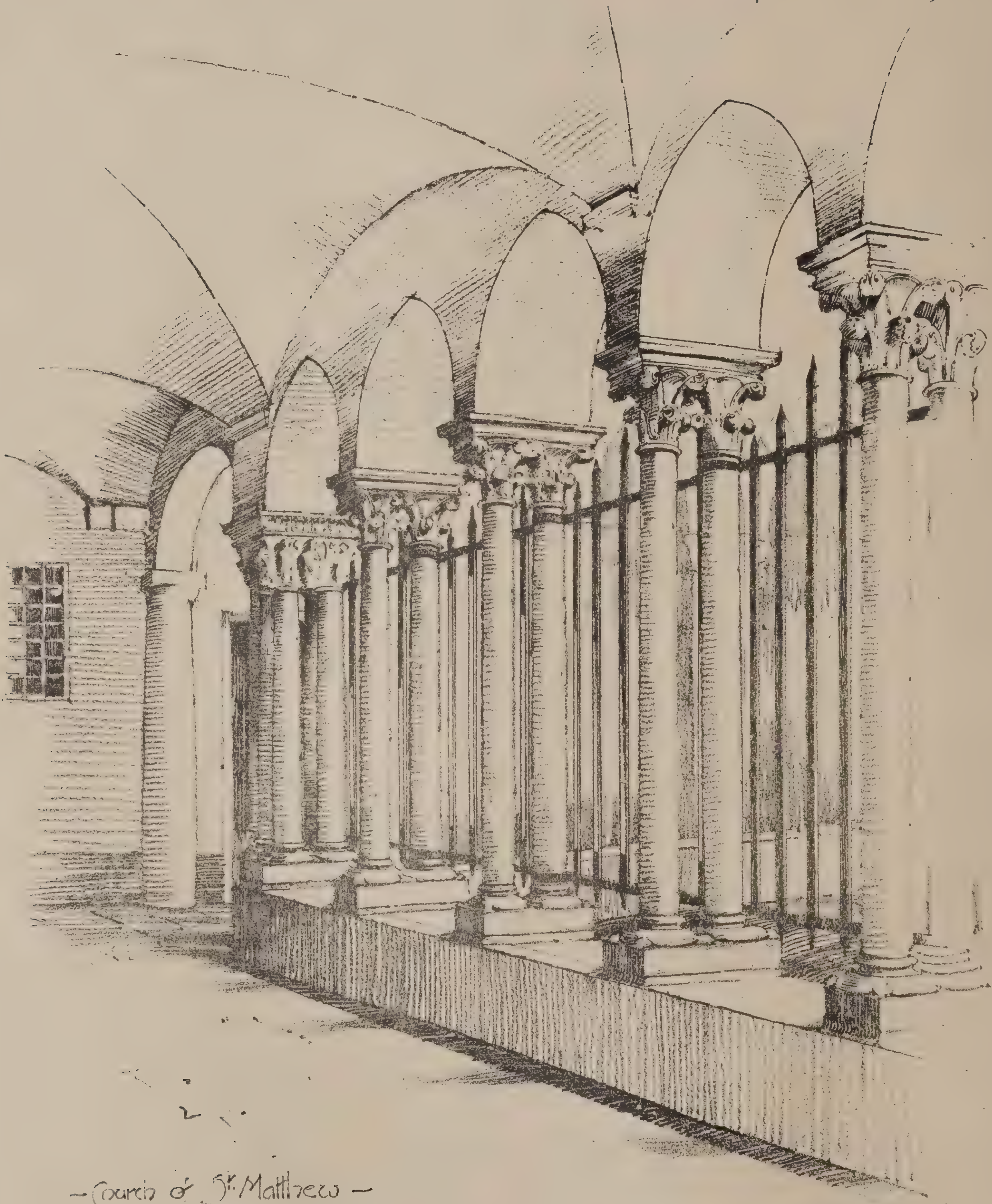

– Church of St. Matthew –
– GENOA. –
– A CORNER IN THE CLOISTERS. –

H. PAINE
1901.

"INK-PHOTO." R. J. EVERETT & SONS, 56 LUDGATE HILL, E.C.

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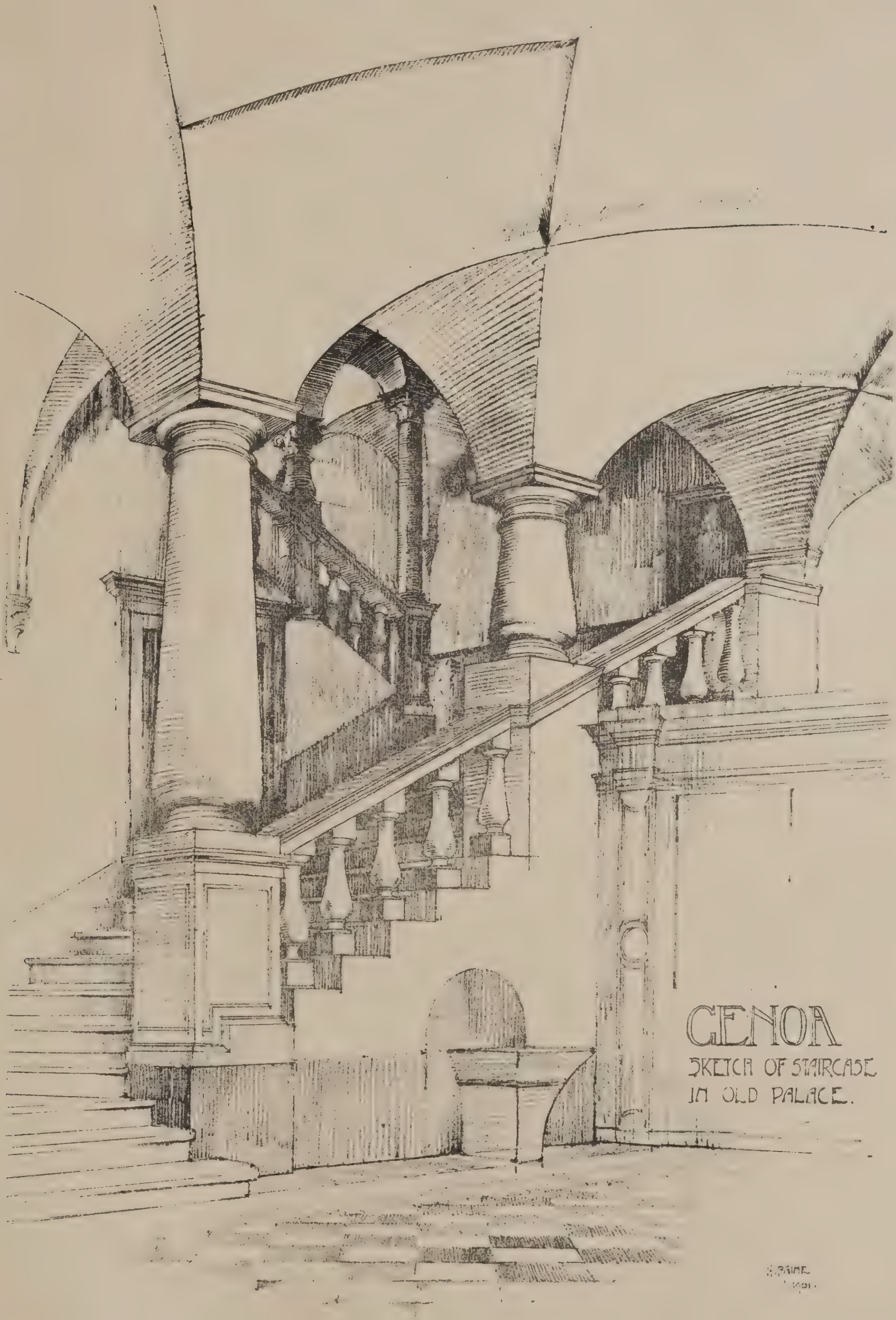

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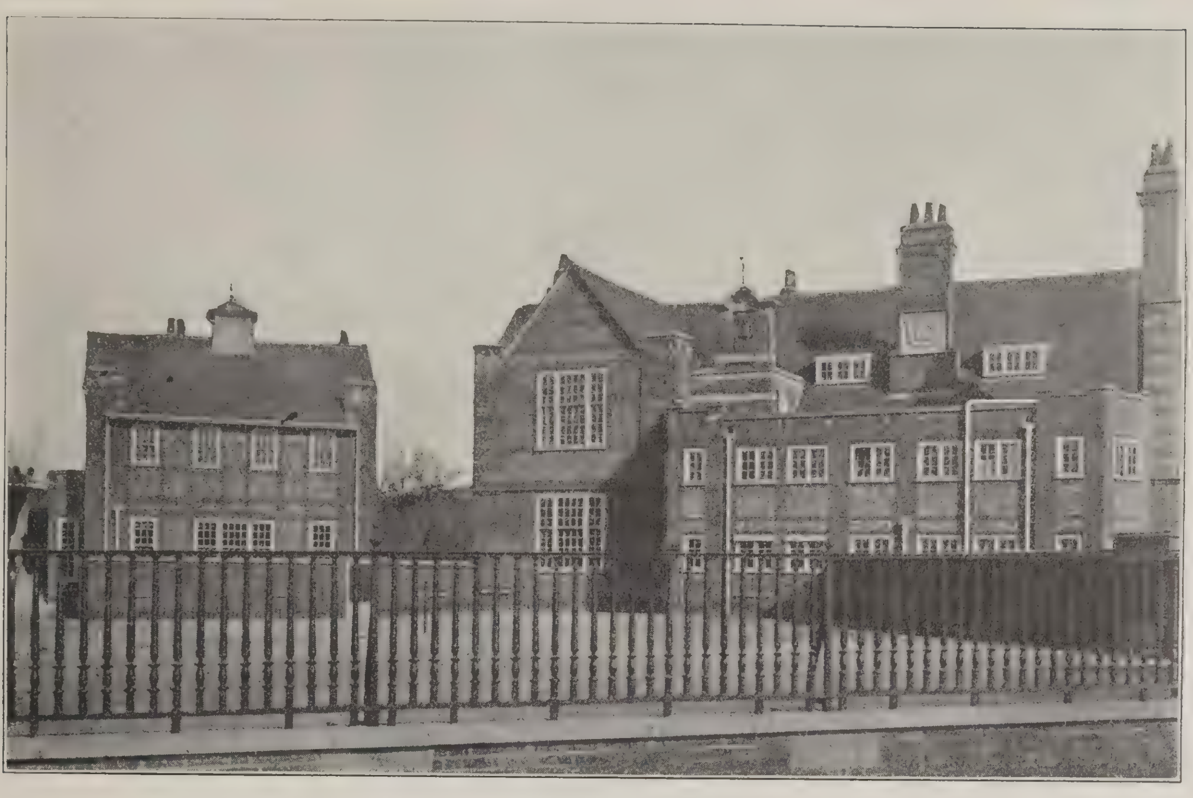
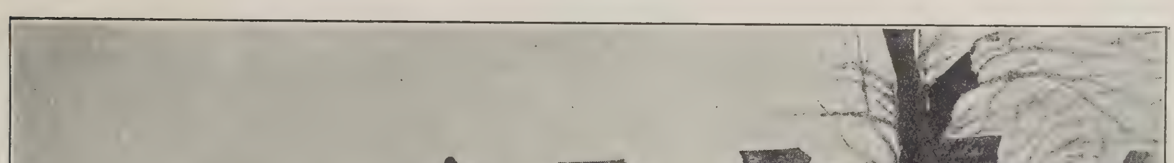
Wednesday, February 18th, 1903.

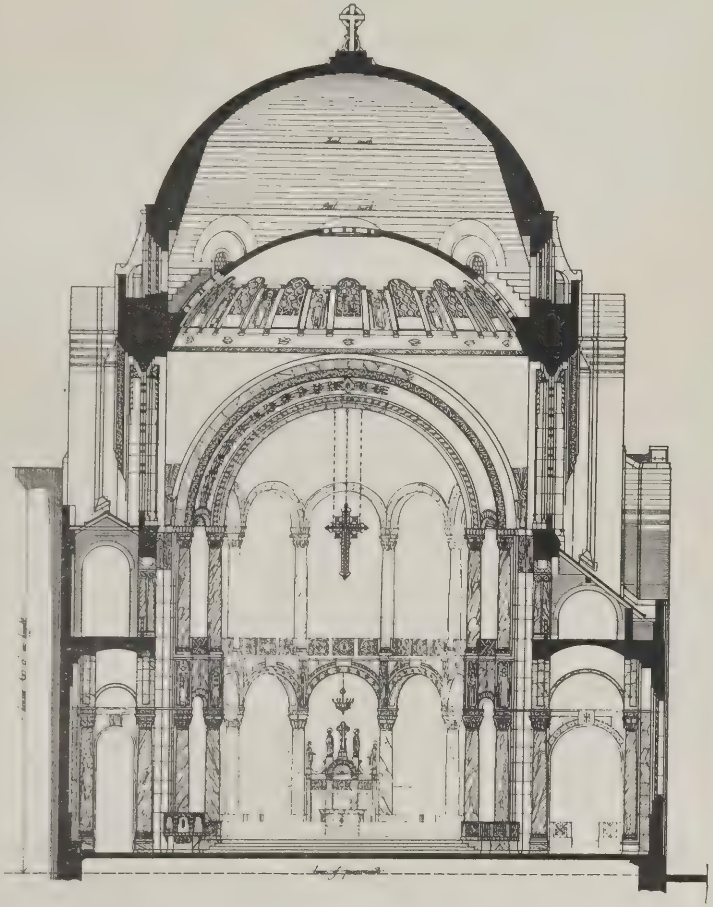


BOARD SCHOOLS, COWLEY OXFORD. LEONARD STOKES, ARCHITECT.

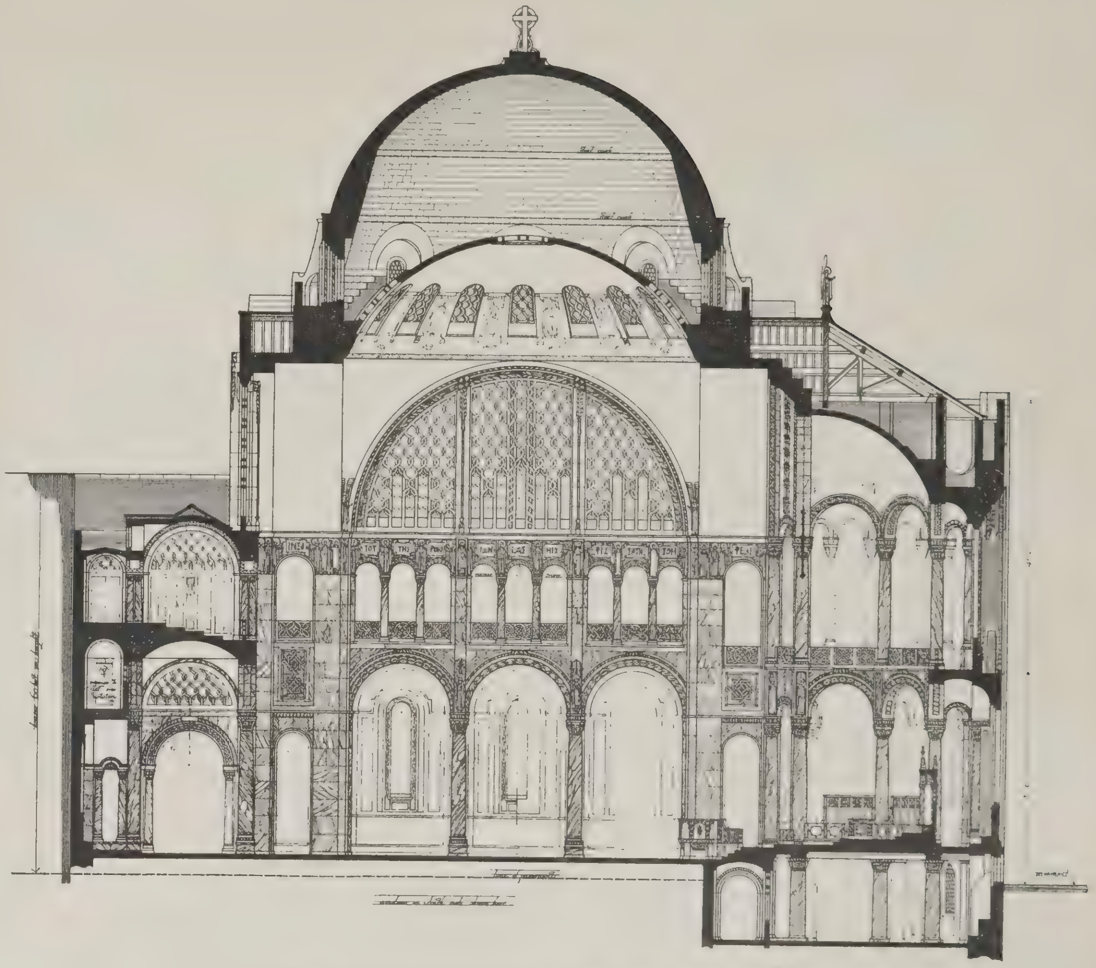


THE ELM TREE INN, COWLEY ROAD, OXFORD.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS



TRANSVERSE SECTION *through Dome*



LONGITUDINAL SECTION *looking towards the North*

THE SOANE MEDALLION PRIZE DESIGN FOR A TOWN CHURCH. BY E. F. REYNOLDS.

The external dome is bound by two curbs, formed of steel girders I bolted together at the angles, at the heights shown on the sections; the lower part of the dome serving as a rigid cone giving abutment to the upper portion. The internal dome is of 9in. brickwork, increasing to 14in. work at the base. The internal walls of dome and aisles are faced with marble slabs up to the general line of springing with the exception of the mosaic frieze under the springing of the dome, and the vaults and domical surfaces are covered with mosaic work. The vaults over chapel, vestry stairs baptistery, and the west entrance spring at a lower level than the main arcades. The spaces between the wooden floors of organ chambers and the upper surfaces of the vaults over chapel and vestry stairs is utilized for the blowing-apparatus and wind trunks of the organs, and also forms an air-chamber beneath the pipes, giving resonance to the tone. The vaults over the north and south aisles are spherical in form, giving no intersection of surfaces.

R.I.B.A.

Mr. Champneys on College Planning.

A MEETING of the Royal Institute of British Architects was held at 9, Conduit Street, W., on Monday evening last, the chair being occupied by the president, Mr. Aston Webb, A.R.A. Mr. Basil Champneys, M.A., read a paper on "The Planning of Collegiate Buildings."

Mr. Champneys said he proposed to deal with such types of collegiate architecture as could be treated by one with such authority as practical experience might justify. Briefly touching upon the archæological aspect of the subject, he referred to the changes of custom which had served to modify the standard set up by the old builders and to the different conditions now to be provided for. When the old buildings were erected students entered on their University careers at a much earlier age than now; the standard of expense, too, was very much lower. Nowadays the University is considered the privilege of the more wealthy; formerly it was designed for all who had sufficient ambition or enterprise, and offered every facility to those who were prepared to face poverty and hardship in the pursuit of mental training. While the change in the age of the students revolutionized the arrangements of rooms, the increased size and scope of the colleges afforded occasion for larger and more comprehensive schemes of planning, and made effective grouping of the buildings possible. The great increase in size opened the way to the development of collegiate planning on an extensive scale, and suggested the type which nearly all existing colleges to some extent illustrate—the grouping of the buildings into one, two or more quadrangles of rather low buildings (in the original colleges there were never more than two floors and an attic), from which the special and more important features, the chapel, the hall and the library, stand out as salient features.

The lodgings of the president, warden, principal or master were usually included in the general grouping, and are seldom distinctive features in the older college buildings. In the present day the head of the college usually requires a more sumptuous abode, which must become an important item in contemporary college architecture; while the fact that many of the tutors and fellows are now married will also serve to complicate the future of collegiate grouping.

For the students' rooms the general arrangement was almost invariably as follows:—A staircase, entered from the quadrangle, led to rooms on either side and, as there were three floors, opened into six sets. This arrangement is usually adhered to in contemporary schemes, and, Mr. Champneys thought, with good reason. In the few cases in which a departure from the ancient type had been attempted the result seemed to be unsatisfactory and destructive of collegiate character. As examples the author cited Mr. Butterfield's buildings at Keble, where it would have been far more satisfactory had the ordinary rooms been planned on the old-established system; the new buildings at New College erected by Sir Gilbert Scott about 1876; and a new group of buildings built by Mr. Bodley at King's College, Cambridge. In both the latter instances the fourth storey, which the author considered subversive of collegiate effect, had been, he believed, forced upon the architects, largely, no doubt, from motives of economy. There was, however, no economy secured by this piling up of buildings. He had tested the comparative cost of buildings of two, three or more storeys, and had found that a building of two storeys, floors of moderate height, was definitely more costly for the same accommodation than one of three; but four or more floors were not more economical than three.

The old system of college planning needed but few modifications to bring it up to date. A few practical requirements consequent on the change of custom have to be met. It is essential that living-room, bedroom and cupboard, or "scout's hole" or "gyp-room," should be independently accessible, though there is some advantage in having a door between the sitting-room and bedroom, as it allows the bedroom to some extent to benefit by the sitting-room fire, and gives the occupant more breathing space at night.

As an example of the most highly developed idea of a mediæval college, the author cited New College at Oxford, which in its ancient form showed a complete design carried out at one time. In order to realize Wykeham's idea it is necessary to remove in imagination certain later additions which have obstructed the original intention. Chief of these is the addition of a storey to the main quadrangle. This raises the buildings to the same level as the gateway tower which originally surmounted them, and also decreases the predominance of the chapel and hall. William of Wykeham was a great Churchman, and his intention was to make the chapel the chief feature of his main quadrangle. The great height and scale still preserves its relative importance, but its predominance over the residential portion of the quadrangle is much hampered by the added storey. The marked predominance of the chapel over the adjoining buildings, the cloister and the tower, are somewhat exceptional features in college architecture, and serve to emphasize the ecclesiastical intention of the founder. The same idea is manifest in a college of modern foundation—Keble—which, as a memorial to a well-known Churchman, was founded with a somewhat similar view. Other colleges which bear the impress of a specially ecclesiastical ideal are Christ Church and Magdalen at Oxford and King's at Cambridge. In the more ordinary type of college the chapel hall, and in many cases the library, are salient features in the grouping, but their relative importance varies very considerably.

A new phase of collegiate life which involves certain modifications of the original type of building is the establishment of colleges for women both at Oxford and Cambridge. Life in these must necessarily be of a more domestic character than in colleges for men and, if the style of architecture follows the requirement, the result will be something which may be called "domestic collegiate." Access to the several students' rooms can no longer be from staircases entereddirect from the open air; the approaches must be properly enclosed and the passages warmed. In the building illustrated by the author—Newnham College at Cambridge—the deviation from the original type is greater, because the system of the college is that of subdivision into halls, each of which is on the whole complete in itself (a reversion, as it happens, to the original arrangement), the only features used equally by the entire college being the great hall and the library, the lecture-rooms and the laboratories. Moreover, the scheme as it now stands has been developed piecemeal; has started from small beginnings and grown up step by step, each instalment of the group of buildings having been supposed, at the time of its erection, to be the last, until the pressure of applicants suggested a further extension.

Another building referred to as deviating from the original type on account of a change of purpose was Mansfield College, which contains all the features of a college without residence for students. It consists of a chapel, a hall and common-rooms, with the requisite offices, bursar's and tutors' rooms, a few bedrooms, several lecture-rooms, a large library and a principal's residence.

In conclusion, the author referred to the most modern type of collegiate arrangement, viz., that designed to meet the requirements of elaborate scientific training. To get an idea of the complicated planning involved in a very moderate portion of these requirements, the author advised his audience to read the papers on "The New Science Laboratories at University College, London," read before the Institute in March, 1894.

DEATH OF MR. F. C. PENROSE.

WE very much regret to announce the death of Mr. F. C. Penrose, M.A., F.R.S., which took place on Sunday afternoon last. The news reaches us at the moment of going to press, and we cannot do better than make use of the brief life-sketch which Mr. Aston Webb gave with so much feeling at the meeting reported on this page. The Council of the Institute, said Mr. Webb, had proposed to approach the Dean and Chapter of St. Paul's so that the remains of their deceased colleague might be interred in the Cathedral, but they had since learned that it was the wish of the family, and had been also of Mr. Penrose himself, that he should be laid by the side of his wife (who had predeceased him by a few days) in the church at Wimbledon near which he lived. The Council would therefore respect these wishes, but hoped that they might see a memorial of some kind in the building on which he bestowed so much time and care. Mr. Penrose was born in 1817, and was therefore in his eighty-fifth year. Only a few weeks ago he gave a paper before the Institute on the evolution of the volute in Greek art—that subject he loved so well. He was articled to Edward Blore, spent twelve months in Messrs. Cubitt's workshops, and afterwards took a most excellent degree at Cambridge—there, too, he rowed for his college. He travelled for three years in Italy and Greece and less important European countries, and came back to start in practice—the choir school in Carter Lane, at the back of the Cathedral, is one of his works. Later he was appointed surveyor to St. Paul's, in succession to Professor Cockerell, and was also one of those who were selected to prepare designs for the alterations to the National Gallery. He was a man of extraordinary scientific and analytical mind, and produced one or two books which will always remain among the classics of architectural literature—notably that dealing with the optical refinements in Athenian buildings, disclosing analyses which had never before been thought of. He was also a student of astronomy—on that subject, too, he produced a book, which led him to consider the orientation of temples; and so it happened that one of the last things to which he devoted his attention was the orientation of the druidical remains of Stonehenge, where he carried out careful researches with Sir Norman Lockyer. As a man, said Mr. Webb, we all respected him and loved him. He had a power of intellect and a simplicity of mind which were the constant admiration of all who came in touch with him. Late in life he occupied the position of president of the Institute, and for many years he had attended the excursions of the Architectural Association, sketching and playing and working with the younger men, ever ready to enter into their zeal and to adapt himself to their mood, but always respected and honoured by them.

A vote of condolence and sympathy with the family was passed—his daughter, Miss Penrose, is principal of Holloway College, and his son a physician of St. George's Hospital. The funeral takes place to-morrow.

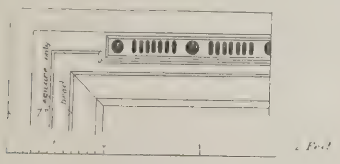
We hope in our next issue to give some further particulars of the life and work of this distinguished man whose death we have now to so deeply lament.

BUILDING CONSTRUCTION.—VIII.

By Our Special Contributor.

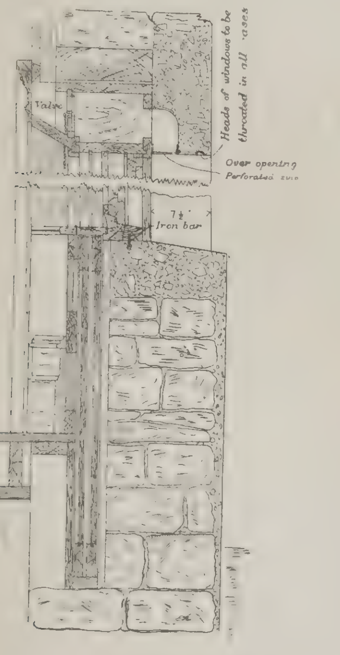
(Continued from p. 419, No. 417.)

THE drawings of joinery details are sufficiently clear in themselves without elaborate description. The section "through a window" is through the window of a reception-room on the ground floor. It is a common defect in joinery to find that no obvious preparation has been made for the roller blinds which are invariably used for windows. These are usually put up by men who pay very scant respect to the joiner's work. They cut off the upper ends of the window slips, and the work has an untidy careless appearance. The joiner should make the proper and workmanlike preparation for the blind fittings. The blinds should be mounted either on reliable spring rollers, or with the substantial old-fashioned pulley, on which the blind cord is taken up when the blind is drawn down, and which allows the friction to be adjusted so that the blind will remain in any position. The kitchen and servants' bedrooms are furnished with 1in. plain mitre clamped shutters. These, and the scullery, pantry, dairy and store windows, have 1¼in. window boards, nosing and scotia.



WINDOW HEAD

Half elevation inside . showing inlet in Architrave from Ventilator



SECTION THROUGH WINDOW

In regard to locks and other fastenings, door furniture and hinges, if the student consults any of the elaborate illustrated catalogues he will find a bewildering variety, and he will probably be at some loss to understand the variety of prices. If he specifies these things in any loose easy-going way, for work to be undertaken by contract, he will find that he will get supplied by the contractor with the very cheapest articles that will conform to the letter of the specification. My own practice for these and other things (as water-closets, baths, lavatories, &c., &c.) is to specify for definite goods, and I quote the number, the page and the maker, reserving to myself the right to accept as good an article for the purpose from a different maker: the reference definitely settles the quality. The young practitioner will consult his comfort if he selects definitely certain makes of ironmongery, and keeps to them unless very definite improvements cause him to change. He should study carefully the different kinds of locks, so as to know whether when he adopts a high-priced article it is really worth the money. For latches the straight-key American latch is now much used. A draw-back lock is used for hall doors, because such locks do not require to be opened by a handle from the outside, and the bolt is conveniently retained drawn when the door is left on the latch. For panelled doors mortise-locks are universally used (unless where it may happen that the framing is too thin to allow of a mortise-lock). There is a bewildering variety of handles for such locks and doors, and yet the handle continues to be the weakest point of a door. The best contrivances are expensive. Our common English door handles are badly shaped; a door handle should comfortably fill the hand; the common handle is grasped by the middle finger only; egg-shaped and reeded handles are an improvement, and a further improvement is to have the handle oval both ways. The handle should fit properly to its washer and the door—there should be no play. The common handle slips on a square spindle, and it is held on by a small screw which screws through the neck and enters small drilled sinkings on the spindle; now, first, there is some trouble to get the sinking exactly at the proper place to keep the handle close to the door, and continual use loosens the screw, which gradually unscrews, or the screw in the brass neck gets widened and destroyed. Attempts to fasten the handles to the door itself fail on account of the thinness of the wood which is left between the sides of the lock and the faces of the door. I am of opinion that a satisfactory handle-fastening would result from screwing into the spindle as well as the neck and providing a concealed washer (this washer might be a spring-washer) between the neck of the handle and the ordinary washer to ensure that the handle would not be loose in the door.

Mortise-locks may also be used for framed and filled (framed and staved) doors, but it is usual to have rim-locks for such doors. Rim-locks are fitted to servants' bedrooms, dairy, pantry and kitchen doors: the store has a dead-lock; outside door of fuel, scullery to yard, and yard doors have stock-locks. The w.c.'s have thumb-latches and inside running bolts; the outside w.c. has also a stock-lock; thumb-latches to scullery doors.

Second only to the trouble with door handles is the question of window-fasteners. I do not like brass and iron combinations in window fasteners, yet this is usual.

The student should make up his mind as to the points of a good kitchen range: he should know how it should be set, and he should be able to absolutely direct both the setting of the range and the whole details of the hot-water supply. In answers to the questions set for South Kensington examinations (see our issue for May 14th, 1902) a diagram was given of the setting of a range and of the hot-water supply. With the arrangement there shown the pipe and its contents, say, between the branch to the scullery and the scullery cock gets cold, and it is necessary to let some water run off before hot water is available; the same remark applies to the bath, but in a less degree, because there will be a slight convection of water in the pipe above the cylinder, but very slight, owing to the small bore of the pipe and the cooling influences. Now it is mostly attempted by plumbers to cure this inconvenience by putting the hot-water supply pipe in *circulation*, which means, however it is masked, that the hot-water supply is connected with the cold supply. It should be remembered that the source of supply is the cold-water cistern, and in the arrangement shown a draw-off of hot water does not bring cold water to the boiler but to the bottom of the cylinder: as shown the arrangement is not defective, but it would be improved by disconnecting the cold supply from the cylinder, carrying it directly to the bottom of the boiler, and having a separate pipe reaching not quite so low in the boiler as the cool-water pipe from the boiler to the bottom of the cylinder—that is, there should be three pipes to the boiler. One way of having hot water always at hand would be to jacket the pipes, and the water in the hot-water pipe might also be kept in circulation by connecting it below with the pipe between the cylinder and boiler, carrying a return pipe to each draw-off cock and making use of a three-way cock which would only allow hot water to come: that is, when a cock is put in use at any time the opening of the cock disconnects the circulation. I have never seen this arrangement, and I put it forward as an untried suggestion: it will probably be objected to that it needs a complicated cock, and this question of circulation in a hot-water supply deserves some consideration. If the "hot"-water supply pipe is made to do duty also as a heating pipe one cannot hope to get "hot" water from it at any time at points distant from the cylinder; the system is expected to do two very different things, namely, to deliver heat at definite points and also to heat rooms all along the course of the pipes. The constant draw-off of heat prevents the water ever becoming really hot unless there are a large boiler and large fires kept constantly going. It appears to me that even with the best arrangement the comfort of having lukewarm water issuing instantly from the hot-water cock is an expensive luxury, and as commonly contrived it is perfectly impossible to get *hot* water by gested above. If I adopt the system suggested above I shall carefully jacket the pipe throughout its course. My attention is particularly directed to this matter, because I am just now designing a hot-water supply for a hospital, and it is proposed that it shall also serve for heating the operating room. I shall certainly not attempt to make the apparatus do both duties at the same time. I was called in the other day to advise in a case where a large sum of money had been expended on a hot-water supply, but which it was found, when the job was finished, would yield no hot water. The room behind the kitchen fire is used for drying clothes, and large bore low-pressure pipes had been carried round it; these were connected with the boot-boiler, and it was expected that in addition to this duty of warming a drying-room the boot-boiler would also supply hot water, and for this purpose a large copper cylinder and hot-water pipes were attached to the boiler. It would appear that this subject is very generally misunderstood, but it is one which deserves careful attention both on the part of architects and plumbers.

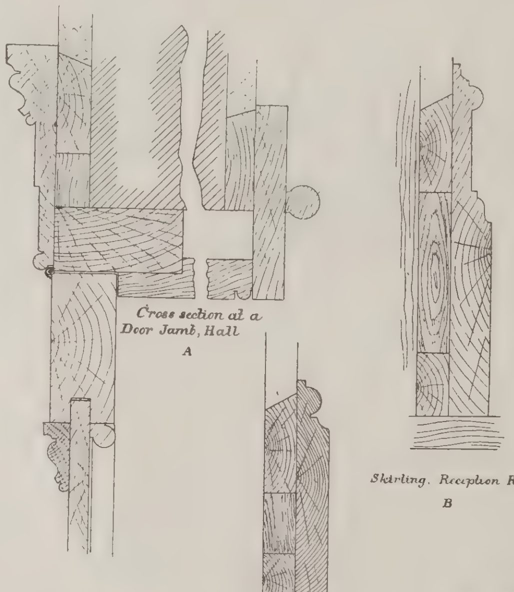
The student should carefully study ranges and make up his mind to one or two definite kinds. His client, or more likely the wife of his client, will have a special make which has been recommended to her, and in such cases the architect has got to do the best he can; it will probably be a good enough range. With a boot-boiler and a regular hot-water system a side boiler (always a troublesome thing) is not needed, and the range can have a roaster on one side of the fire and an oven on the other side. There is a range which I have used in which a slide is drawn out between the roaster and the fire, so that it is really a roaster and not merely a second oven; there is a hole in the crown through which the meat may be suspended from a bottle-jack which hangs from the plate-rack. I have found this range to be satisfactory. People who use the top plate very much like a range with rising fire-bars, by means of which a shallow fire is kept up to the plate. Some people find it convenient to open the back plate in front of the boot-boiler to allow the fire to be opened on top for broiling, &c. There are numbers of excellent ranges made; I am of course dealing with the requirements of small houses such as I am describing.

There is a great variety of common grates, and if a man has no definite ideas of his own about them it becomes a complicated matter to choose grates on each new occasion. I may say that my ideal grate is a dog-grate set on a tiled hearth in a tiled recess; its back and sides should be of good heavy fire-brick blocks; it should be rectangular in plan and simple in construction. One needs a fairly good drawing chimney for such a grate; the flue should be fairly over the centre of the fire, and the opening should be neatly and regularly gathered to the flue. Such a grate should be economical; the radiation from the firebrick blocks and the reflection from the tiles should throw the heat into the room. Whether we can afford to have dog grates or not, our grates should be movable from their places, and it should be possible to renew their fire-blocks. In some parts it is impossible to prevent workmen building register grates into their places and fixing the mantelpiece in front in such a way that when the worn-out grate has to be renewed the mantelpiece has to be taken down.

The water supply was obtained by building an impounding wall of concrete across a small stream about 300yds. from the house. From this a 2in. cast-iron pipe brought the water to the house; to provide for a proper supply to the boot-boiler a small tank was placed as previously described in the roof. Water was taken directly from the pipe to the water-closet flushing tanks and to the other points of cold-water supply by $\frac{3}{4}$in. alloy pipe (lead alloyed with tin. The water being soft, it is not advisable to use lead pipes, which are attacked by soft water). A very hard water is very troublesome owing to the coating of boilers, but an absolutely soft water has also special objections with it — boilers rust through more rapidly than with hard water. Hot- and cold-water supplies were brought to bathroom and to the pantry and scullery. The cylinder is placed in the linen-room. There is nothing specially to say about the supply cocks; those for the bath and lavatory basin are the ordinary white-metal cocks supplied with the articles; in the pantry and scullery there are brass plug cocks, with lever handles. There are, of course, refinements, and there is much to be said for them—non-conducting handles for hot-water cocks, &c. What has been said about other manufactured articles may be repeated here. Let the young practitioner make up his mind as to his patterns for common substantial work, and let him slowly change as experience will direct him. The elaboration of baths, water-closets, &c., is now very complete, and it is easy to select standard items of this kind. For such things, I have already said, I specify them by their number and catalogue, and I reserve power to accede to a contractor's request if for any reason he has difficulty in obtaining the goods in time, or if he prefers to deal with a different firm, provided the goods are of equal quality. The floor of the bathroom is formed of concrete strengthened with iron joists; it is tiled, and here again I specified a particular pattern from a manufacturer's catalogue; the walls also for 4ft. over the floor are tiled. The soil-pipe is carried out at once to an outside soil-pipe, which is of heavy cast-iron jointed with lead, and this is carried up as a ventilating pipe to a sufficient height and finished above with a domical grating to keep out birds, &c. The drawing does not show the drains properly; they are laid in straight lines, having Armstrong junctions, and in the event of any stoppage they can be sponged out. The bath and lavatory wastes discharge beneath trapped gratings, and the pantry and scullery sinks discharge through grease traps under gratings; these gratings are trapped from the drain which carries soil. The drain is carried direct to the sea.

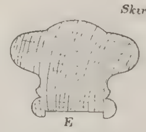
The yard is floored with concrete and drains to the Lowe's gulley shown in the centre. The w.c.'s. are also floored with concrete. The scullery and kitchen are tiled with red and black tiles laid on a foundation of concrete. The fuel house is floored with cobbles; the porch is tiled with coloured tiles.

(To be continued.)

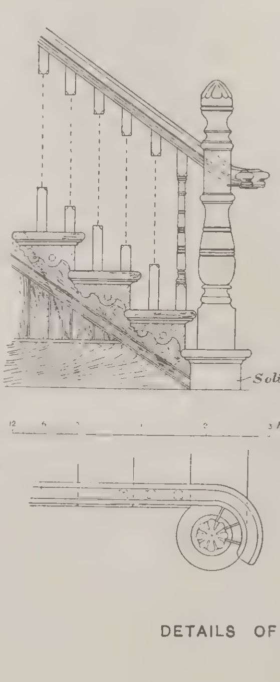

Cross section at a Door Jamb, Hall
A

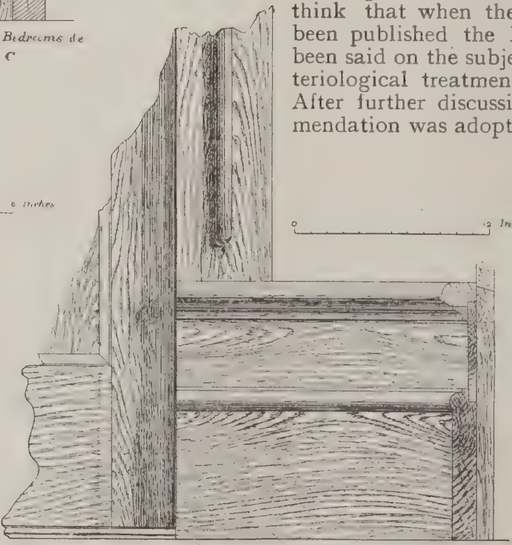
Skirling. Reception Rooms
B

Skirting Bedrooms &c
C


E
Section through Handrail.

Lines 12 0 1 2 3 4 5 6 *Inches*
Scale for A, B, & C, & E





Bottom corner of door in Hall.

DETAILS OF JOINERY.

Builders' Notes.

The Nottingham Master-Builders' Association held its annual dinner last week, Mr. Henry Vickers presiding.

Newcastle and District Building Trade Employers' Association held its annual meeting last week, when the following officers were elected:—Mr. W. T. Weir, president; Mr. Alexander Pringle and Mr. Stephen Easten vice-presidents.

The London Building Acts Amendment Bill.—At a meeting of the inhabitants and ratepayers of the Ward of Cheap held on Friday last this Bill was held to be arbitrary, impracticable, would occasion serious loss of business to the citizens, and ought to be opposed. It was also agreed that the Corporation should be the authority in the City for carrying out further powers.

London County Council.—At last week's meeting of the Council it was decided that the new street from Holborn to the Strand should be named Kingsway, and the crescent-shape portion connecting with the Strand, Aldwych.—The Housing Committee's estimate of £9,983 for the erection of working-class dwellings to be called Darcy Buildings, London Fields, was approved.—The Main Drainage Committee reported that the experiments in the bacterial treament of sewage and sewage effluent at the Barking and Crossness outfall works were completed some time ago, and, being of opinion that the results of the experiments should be recorded in book-form, they then directed the chemist, Dr. Clowes, in conjunction with Dr. Houston, to collate the information obtained. They recommended that £305 should be expended in printing and binding 2,000 copies of the report.—Sir W. Collins said he understood that the publication of these reports was only to be the forerunner of certain important proposals by the committee in regard to the bacteriological treatment of sewage. Some of the reports presented seemed to show that the effluent after it left the coke-breeze was far from harmless. Indeed, he gathered from some experiments on animals that very serious and fatal results had come from the injection of some of this effluent. He hoped that the Main Drainage Committee would not think that when their report had been published the last word had been said on the subject of the bacteriological treatment of sewage.—After further discussion the recommendation was adopted.

Keystones.

A new Volume of the "Builders' Journal" —Vol. 17—begins with this issue: and it is therefore opportune for subscribers to renew their subscriptions.

The Ipswich and East Suffolk Hospital has been supplied by Messrs. E. H. Shorland and Brother, of Manchester, with their patent Manchester stoves.

A new Congregational Church at Worthing is being built at an estimated cost of £5,500. The work has been entrusted to Messrs. Longley & Son, of Crawley, the architects being Messrs. Spurrell & Murray.

The Bristol Society of Architects held a meeting last week (Mr. Joseph Wood, president, in the chair), when Mr. E. Guy Dawber read a paper on "The Buildings of the Cotswolds."

Ickford Parish Church, near Oxford, which it is proposed to restore in memory of Archbishop Sheldon, is a fine specimen of Early English work of the beginning of the thirteenth century, and has a tower with a "saddle-back" roof.

The new Naval Barracks at Chatham for the accommodation of seamen attached to the depôt at that station are rapidly approaching completion. The buildings occupy the site upon which the convict prison formerly stood.

St. Peter's Roman Catholic Church, Partick, has just been opened. The nave, which is 104ft. long, consists of seven bays, and the chancel is 34ft. long. Red stone has been used throughout the building, which was designed by Messrs Pugin & Pugin, of London.

The new Parish Church of All Saints at Adamsdown, Cardiff, has been formally opened by the Bishop of Llandaff. It provides accommodation for 330 worshippers and has cost £2,500. Messrs. Seddon & Canter were the architects, and Messrs. E. R. Evans Brothers the builders.

Bungalows for South Africa. — Messrs. Boulton & Paul, Ltd., of Norwich, have completed for South Africa a Government order for 150 wooden bungalows to be used as officers' residences. Each is 80ft. long and 22ft. wide, and comprises a drawing-room, dining-room, four bedrooms and bathroom, with a verandah all round. Connected with each main building by a covered way is a kitchen block, with the usual offices and servants' bedroom. The structures are raised 2ft. above the ground, and are supported on ant-proof cast-iron bases.

The Sending-in Days for the Royal Academy have been fixed. Water-colours, miniatures, black and white and architectural drawings, engravings, etchings and all other works shown under glass must be sent to Burlington House on Friday, March 27th. Oil paintings will be received on Saturday March 28th, and Monday, March 30th, and sculpture on Tuesday, March 31st. Works will be received at the Burlington Gardens entrance only between the hours of 7 a.m. and 10 p.m. on the days appointed. Forms and labels will not be ready for issue until March 1st.

York's Ramparts in Danger.—At the annual meeting of the Yorkshire Philosophical Society the proposal now under discussion by the city authorities for "beautifying" the ramparts by planting them and laying them out for walks, preparatory to throwing them open as public playgrounds, was protested against on the grounds that the dangerous state of Clifford's Tower was due to the trees undermining the banks, and that a similar effect might occur with the city walls; large portions of the city walls of Nuremburg, which closely approximated to those of York, having recently fallen down for this very same reason.

Combe Florey Rectory, near Taunton, has been fitted with hot-water heating apparatus by Messrs. John King, Ltd., of Liverpool.

The Architects' Registration Bill is being pushed with zeal by the Society of Architects, who have circularized the profession in support of the movement.

A new Bank for Parr's has been erected in Spring Gardens, Manchester, from designs by Messrs. C. Heathcote & Sons, architects, of Manchester.

The Decoration of the Panthéon Paris.—M. Detaille has been entrusted with a panel for the decoration of the chancel of the Panthéon representing "Le Chant du Départ."

Two Fire Stations for South London are being erected, one at the Vauxhall end of the Albert Embankment and the other in Mitcham Lane, Streatham. The former is being carried out by the Works Department of the London County Council at an estimated cost of £8,450.

The Colney Hatch Fire.—The jury at the inquest in their verdict said the London County Council, the Lunacy Commissioners and the Home Office were greatly to blame for sanctioning the plans of the Annexe, and recommended that all emergency doors should be made to open outwards, and should be opened immediately after sounding the alarm.

The Manchester Society of Architects held a meeting last week, Mr. Mould presiding. Mr. E. Percy Hinde, of Liverpool, read a paper on "Some elementary school buildings." Much, he remarked, was to be said in favour of the one-storey building if the site would permit of its adoption. In the future the average cost of buildings, he thought, would be greater than hitherto.

Skipton Town Hall. — Messrs. Butler Wilson, F.R.I.B.A., and Oglesby, architects, of Leeds and London, have been commissioned to prepare designs for the enlargement of the Town Hall and Council Offices, Skipton, Yorks. The scheme comprises additions to hall, with a new supper-room, the remodelling of the council offices and the provision of a new court-house for the magistrates.

The Architectural Association of Ireland held its fifth technical demonstration at the premises of Messrs. J. & C. McGloughlin, Brunswick Street, Dublin on Thursday, February 12th. The plant for planing, drilling, hammering and punching ironwork was inspected, work being executed for the benefit of the members. Much interest was occasioned by the manufacture of a large hammered iron leaf from the rough plate. The large gates and piers for the Phœnix Park were much admired. After an inspection of the brass finishing and lacquering, a vote of thanks was passed to Mr. J. McGloughlin, whose remarks on the design and treatment of hammered iron were much appreciated.

Obituary.

Mr. Harry Whiting, of the firm of Messrs. R. M. & H. Whiting, builders, of Ospringe, Thanet, died recently at the age of fifty-five years.

Mr. Philip Henry Perrin, builder and contractor, of Bath Road, Calcot, Tilehurst, died on January 28th at the age of fifty-eight years.

Mr. Robert Moore, a well-known Middlesbrough architect, died recently. Mr. Moore had been in business in Middlesbrough as an architect for over thirty years, and most of the large reconstructed hotels in the town are from his designs.

Mr. John Mervyn Wrench, M.I.C.E., chief engineer of the Great Indian Peninsular Railway, died on January 22nd at Bandora, Bombay. As a young man Mr. Wrench was a pupil in the office of Messrs. Bidder & Kinskowski. He began his Indian career as assistant engineer on the Scinde, Punjab and Delhi Railway in 1873, and suggested the utilization of the large stock of worn-out iron rails for building small bridges, whereby a great saving was effected. In 1887 he was employed in the survey and construction of the Indian Midland Railway, where he introduced the further use of old rails for the construction of temporary scaffolding in the erection of the more important bridges.

THE CEMENT TRADE IN 1902.

MESSRS. TULLOCH & CO., brokers for English, German and Belgian cements, of 4, Fenchurch Avenue, London, E.C., in their annual market report state that trade during 1902 was not, on the whole, prosperous for manufacturers. Consumption in home and Continental markets has been fairly maintained, but in Great Britain the invasion of foreign cements has continued, and the export trade from this country, with the exception of South Africa, East Indies and the United States, has shown no material improvement. The trade generally is still suffering from the effects of over-production, and the absence of united action on the part of many of the leading works.

In London the demand in the earlier part of the year ruled light, but during the summer months and autumn off-take was decidedly brisker, and the general prospects now point to a gradually improving demand during the present year. Stocks are light, and the all-round trade is in better shape than it was twelve months ago. Prices at the mills varied from 24s. 6d. to 25s. per ton. Total production in the United Kingdom they roughly estimate at about 2,100,000 tons, showing a slight falling off as compared with 1901. Prices for export have been lower on the whole, ranging from 5s. 3d. to 5s. 6d., according to quantity and delivery dates.

In Germany, taking the trade all round, there is very little improvement to report. The building trade has been less active, and the tightness of money has told against any large consumption on public and municipal works. In many of the districts cement has been sold at a heavy loss to the mills. The break up of the syndicates has not contributed to confidence, although the wise policy exercised in closing some of the larger works may, in time, bring about some improvement. Immediate prospects do not point to any return of prosperous times such as the trade enjoyed in 1897–1900. For export very low prices have been accepted.

In Belgium mills producing artificial cement have felt the depression, but a reduction in their production is likely to put things on a healthier basis. Low prices have been accepted to keep the mills running, and prospects for the immediate future do not warrant any expectation of a return to better prices. The mills manufacturing natural cement have suffered less severely.

In the United States an active and large trade was done during the past year. Mills, partly owing to the coal strike in the early fall, found it difficult to cope with the big demand, and prices advanced. Most of the mills are well sold ahead for the present year, and rates are firm, but opening of new works may during the present year bring in competition, and help to reduce selling prices.

In conclusion, the general opinion is that the trade has seen its worst, and that although any return to prosperous times is not likely, there is more confidence in a gradual improvement during the present year.

Current Market Prices.

FORAGE.

		£	s.	d.	£	s.	d.
Beans	per qr.	1	9	9	1	12	3
Clover, best	per load	4	10	0	5	0	0
Hay, best	do.	3	15	0	5	10	0
Sainfoin mixture ..	do.	3	15	0	4	5	0
Straw	do.	1	8	0	1	18	0

OILS AND PAINTS.

		£	s.	d.	£	s.	d.
Castor Oil, French ..	per cwt.	1	1	0	1	2	2
Colza Oil, English ..	do.	1	4	3	—		
Copperas	per ton	2	2	6	—		
Lard Oil	per cwt.	2	13	0	2	14	0
Lead, white, ground, carbonate	do.	1	4	10	—		
Do. red	do.	1	0	$4\frac{1}{2}$			
Linseed Oil, barrels ..	do.	1	6	0	—		
Petroleum, American ..	per gal.	0	0	$5\frac{3}{8}$	—		
Do. Russian .	do.	0	0	$4\frac{1}{4}$	0	0	$4\frac{3}{8}$
Pitch	per barrel	0	7	0	—		
Shellac, orange	per cwt.	6	0	0	—		
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Home Melt ..	per cwt.	1	10	9	—		
Tar, Stockholm	per barrel	1	1	6	—		
Turpentine	per cwt.	2	3	$1\frac{1}{2}$	—		

METALS.

		£	s.	d.	£	s.	d.
Copper, sheet, strong ..	per ton	71	0	0	—		
Iron, Staffs., bar	do.	6	5	0	8	10	0
Do. Galvanised Corrugated sheet ..	do.	11	2	6	11	7	6
Lead, pig, Soft Foreign ..	do	11	11	3	—		
Do. do. English common brands	do.	11	15	0	—		
Do. pig, English 3lb. per sq. ft. and upwards	per ton	13	10	0	—		
Do. pipe	do.	14	0	0	—		
Nails, cut clasp, 3in. to 6in.	do.	9	5	0	—		
Do. floor brads	do.	9	0	0	—		
Steel, Staffs., Girders and Angles	do.	5	15	0	6	5	0
Do. do. Mild bars ..	do.	6	10	0	7	0	0
Tin, Foreign	do.	133	15	0	134	5	0
Do. English ingots ..	do.	135	0	0	136	0	0
Zinc, sheets, Silesian ..	do	23	10	0	—		
Do. do. Vieille Montaigne	do.	23	10	0	—		
Do. Spelter	do.	20	10	0	20	15	0

TIMBER.

Soft Woods.

		£	s.	d.	£	s.	d.
Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow ..	do.	5	5	0	6	5	0
Do. Pitch	do.	3	0	0	3	4	0
Laths, log, Dantzic ..	per fath.	4	10	0	5	10	0
Do. Petersburg ..	do.	7	5	0	—		
Deals, Archangel—							
2nd White, 3×9 ..	per P.Std.	10	15	0	—		
Do. 3×7 ..	do.	8	15	0	—		
3rd White, 3×11 ..	do.	9	10	0	—		
Do. 3×9 ..	do.	9	15	0	—		
Deals, Haparanda—							
1st Yellow, 2×4 ..	do.	8	10	0	—		
Deals, Riga	do.	6	15	0	12	10	0
Do. Petersburg 1st Yellow	do.	10	10	0	11	5	0
Do. do. 3rd Yellow 3×7	do.	8	10	0	—		
Do. do. do. $2\frac{1}{2}$×7	do.	8	15	0	—		
Do. do. White	do.	7	10	0	11	10	0
Do. Gefle, 1st and 2nd Yell. 3×11	do.	18	10	0	—		
Do. do. do. 4×9	do.	17	15	0	—		
Do. do. do. 3×9	do.	16	5	0	—		
Do. Skonvik, 3rd Yell. 3×9	do.	16	15	0	—		
Do. Wyburg, 1st & 2nd Yell. 3×9	do.	9	15	0	—		
Do. Narva, 3rd Yell. 3×11	do.	8	10	0	—		
Do. do. do. $2\frac{1}{2}$×7	do.	8	15	0	—		
Do. White Sea ..	do.	12	15	0	15	5	0
Do. Quebec Pine— 1st Bright Yell., 3×8× 12ft. and 13ft ..	do.	18	10	0	—		
Do. do. do. 3×7 ..	do.	18	0	0	—		
Do. do 1st Red, 3×6	do.	12	15	0	—		
Do. Montreal Yell. Pine, 2nd, 3×11×16ft & 17ft.	do.	18	10	0	19	5	0
Do. Quebec, White Spruce— 1st, 3×9 up to 14ft.	do.	13	5	0	—		
Do. 3×7	do.	12	0	0	—		
2nd, 3×6 to 3×9 ..	do.	8	10	0	—		
Do. 3×9×6, 7 & 8ft.	do.	9	5	0	—		
Do. English Bay, White Spruce, 2nd, 2×7 ..	do.	8	0	0	—		
Do. New Brunswick ..	do.	7	15	0	8	0	0
Battens, all kinds ..	do.	6	15	0	12	5	0
Flooring Boards 1in. prepared, 1st	per square	0	10	6	—		
Do. 2nd	do	0	10	0	0	10	6
Do. 3rd &c.	do	0	7	9	0	10	3

Hard Woods.

		£	s.	d.	£	s.	d.
Ash, Quebec	per load	3	12	6	—		
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	15	0	0	20	0	0
Cedar, Cuba	per ft. sup.	0	0	$3\frac{3}{4}$	0	0	5
Do. Honduras ..	do.	0	0	$4\frac{5}{16}$	—		
Do. Tobasco	do.	0	0	$4\frac{13}{32}$	—		
Elm, Quebec	per load	4	0	0	5	2	6
Mahogany, Average Price for Cargo, Honduras ..	per ft. sup.	0	0	$5\frac{3}{4}$	—		
Do. African ..	do.	0	0	$4\frac{3}{4}$	—		
Do. St. Domingo	do.	0	0	$3\frac{1}{4}$	0	0	6
Do. Tobasco ..	do.	0	0	$4\frac{21}{32}$	—		
Do. Cuba ..	do.	0	0	$4\frac{1}{4}$	0	0	$8\frac{7}{20}$
Do. Lago ..	do.	0	0	$3\frac{15}{16}$	0	0	$4\frac{7}{8}$
Oak, Dantzic and Memel	per load	3	5	0	3	15	0
Do. Quebec	do.	6	5	0		10	0
Teak, Rangoon, planks ..	do.	16	0	0	17	10	0
Wainscot, Riga (Baulk)	do.	3	15	0	5	15	0
Walnut, Odessa Crown	do.	3	15	0	5	15	0
Do. American ..	per ft. cube	0	2	0	—		
Do. Lagos	per ft. sup.	0	0	$3\frac{19}{32}$	—		

New Companies.

Adams' Patent Sewage Lift Co., Ltd., sanitary engineers and manufacturers, Peaseholm Green, York. Capital: £20,000 in £10 shares (1,000 preference). Directors: M. J. Adams and S. H. Adams.

Adamsez, Ltd., sanitary engineers and manufacturers, of Leeds. Capital: £35,000 in £10 shares (1,750 preference). Directors: M. J. Adams and S. H. Adams.

Artistic Tile Co.. Ltd., tilers, decorators, &c., 3 and 4 Berners Street Mansions, Berners Street, W. Capital: £8,007 in £10 shares.

C. R. Jones & Sons, Ltd., manufacturers of roofing tiles, Ladywood Brick and Tile Works, Jackfield, R.S.O., Salop. Capital: £5,000 in £1 shares.

E. J. Robinson, Ltd., sawyers, timber merchants, &c., Quebec Wharf, Thomas Street, Limehouse. Capital: £12,000 in £1 shares.

George Bray & Co., Ltd., lighting, heating and electrical engineers, Bagley Works, Leeds. Capital: £160,000 in £1 shares (80,000 preference.)

Gypsum Mines, Ltd. Capital: £90,000 in £1 shares.

Ledbetter & Co., Ltd., electricians, &c., of Leicester. Capital: £2,000 in £10 shares.

R. W. Fitzmaurice & Co., Ltd., road paviors, Browning Street, Birmingham. Capital: £10,000 in £1 shares (4,000 preference).

Smith Brothers (Cheltenham), Ltd., timber merchants, brick and tile manufacturers, &c., Albion Street, Cheltenham. Capital £30,000 in £1 shares (10,000 preference).

Swansea Valley Anthracite Collieries Co., Ltd., colliery proprietors, brick manufacturers, &c. Capital: £20,000 in £10 shares.

West-End Estates Co., Ltd., 1A Sloane Court East, S.W. Capital: £45,000 in £1 shares (22,500 preference).

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, Builders' Journal, *9, East Harding Street, E.C.*

Aberavon.—For alterations to Mr. H. J. Stokes' shop, Aberavon. Mr. Frank B. Smith, architect, Port Talbot:—

Morgan Cox	£318	0	0
John Davies	306	10	0
John Nicholas	249	0	0
John Lalle	216	13	5
Anderson & Vaughan*	206	12	0

* Accepted. [All of Port Talbot.]

Bangor (Wales).—For alterations and additions to Glanadda Infants' School, for the Bangor School Board. Mr. Harold Hughes, architect, Bangor.—

H. & J. Williams, Llanrhyddlad, Anglesey	£1,851
H. Edwards, Carnarvon	1,745
Roberts & Owen	1,692
Humphreys & Jones, Llangwyllog	1,621
W. Jones	1,598
R. & J. Williams	1,595
Jones & Williams*	1,586

* Provisionally accepted. [Rest of Bangor.]

Bexley Heath (Kent).—For the adaptation of the buildings known as Oak House, Broadway, Bexley Heath, for council offices, and the erection of council-chamber, waiting- and cloak-rooms, &c., for the Bexley Urban District Council. Mr. W. T. Hawse, surveyor:—

T. Pearce, Thornton Heath	£3,931	0	0
A. J. Glock, Lee, S.E	3,079	11	2
F. Spencer & Son, Erith	2,475	0	0
G. F. Minter, Westminster	2,375	0	0
G. W. Lucas, Bexley	2,228	5	0
W. H Smith, Bexley	2,192	14	6
Ennis Brothers, Erith	1,988	2	3
J. Lonsdale,* Swanley Junction ..	1,960	0	0

* Provisionally accepted.

Bournemouth.—For building new club-room and making certain alterations and additions to the Brunswick Hotel, Bournemouth, for the directors of Marston's Brewery Co., Ltd., Poole. Mr. Walter Andrew, architect and surveyor, Parkstone and Poole. Quantities by architect:—

Williams & Son	£1,486
Jones & Son	1,423
Maddeford & Co.	1,352
Baker & Pearcy	1,350
A. & F. Wilson	1,338
Jenkins & Son	1,335
Miller & Sons,* Bournemouth	1,300

* Accepted.

Bromley.—For the erection of two houses, Sundridge Park. Mr. W. James Pamphilon, architect:—

Perry Brothers	£4,397	Duthoit	£3,815
Payne	3,896	Lowe	3,785
Arnaud & Son	3,896	Crossley & Son ..	3,680
Graty	3,873		

Cardiff.—For the construction of two masonry skew-arch bridges as follows, for the Corporation: (Contract No. 1) bridge over docks feeder in Cathays Park; (2) bridge to carry North Road widening over docks feeder. Mr. W. Harpur, M.I.C.E., borough engineer:—

Bridge No. 1.

Williams & Hoare	£5,042	14	9
F. Ashley	4,934	3	6
A. W. Cadwallader	4,873	13	6
Lattey & Co, Ltd.	4,763	18	9
J. Allen & Son	4,705	9	9
E. Turner & Sons	4,305	10	5
C. Davies*	4,035	11	9

Bridge No. 2.

Williams & Hoare	1,663	5	9
F. Ashley	1,699	13	9
A. W. Cadwallader	1,676	6	5
J. Allen & Son	1,676	7	7
Lattey & Co., Ltd.	1,592	0	0
C. Davies	1,499	0	10
E. Turner & Sons*	1,481	3	3

* Accepted. [All of Cardiff.]

Croydon.—For the erection of four houses, Eden Road, Park Lane. Mr. A. Broad, architect, 22 George Street, Croydon. Quantities by the architect:—

W. Potter	£3,173	Smith & Sons, Ltd. ..	£2,992
Dawson & Son	3,150	Hanscomb & Smith	2,984
Worlsford & Sons ..	3,079	D. W. Barker	2,980
E. J. Saunders	3,050	Akers & Co.	2,939
E. J. Burnand	3,029	Smith & Sons* ..	2,773

* Accepted.

Croydon.—For the erection of thirty-two cottages, Beulah Grove, Croydon, for Mr. G. C. Parsons. Mr. Arthur L. Dartnell, architect, 62 High Street, Croydon:—

G. Brayne	£7,904	0
Smart & Son	7,345	0
W. Gowman	7,336	0
W. Martin	7,196	10
W. Roberts	6,688	0
Cronk & Richardson*	6,067	4

* Accepted.

Durham.—For the construction of 1,868 lineal yds. of 15in., 12in., 9in. and 8in. pipe sewers, with manholes, flushing shafts and chambers, and ventilation shafts in connection therewith, the construction of sewage tanks and bacteria beds, and the levelling, laying-out and fencing of 4½ acres of land for sewage-disposal purposes at Ushaw Moor, Broom, for the Durham Rural District Council. Mr. George Gregson, surveyor:—

J. Thompson, Gosforth, Newcastle-on-Tyne	£3,857	1	3
G. T. Manners, Durham	3,780	0	0
R. Oliver, Gilesgate Moor	3,495	13	9
G. Wells, Harton, South Shields ..	3,259	16	0
J. G. Bradley, Durham	2,906	9	3
J. Carrick,* Durham	2,761	12	7

* Accepted.

Fernhurst (near Haslemere).—For the erection of a new school to accommodate 120 children at Camelsdale, Shottermill, for the Fernhurst (U.D.) School Board. Mr. J. H. Howard architect, Lower Street, Haslemere:—

B. Slade & Son, Fernhurst	£1,600	0
Chapman & Lowey, Grayshott	1,470	0
G. Gardiner, Shottermill	1,427	5
J. W. Humphreys, Godalming	1,340	0
F. Milton, Witley	1,296	0
Haslemere Builders, Ltd., Haslemere ..	1,257	0
A. Longhurst, Chichester	1,167	0
W. Harding,* Shottermill	1,115	0
J. Marshall, Shottermill	1,112	0

* Provisionally accepted.

Gloucester.—For the reconstruction of the Sudbrook culvert under the Midland Railway Co's goods yard, High Orchard, Gloucester. Mr. R. Read, A.M.I.C.E., city surveyor:—

Smith & Co., West Kilbride	£7,826	9	4
E. Nuttall, Bristol	7,189	4	1
J. Riley, Cheltenham	7,051	4	3
A. Kellett & Sons, Birmingham ..	6,799	5	7
S. Wood, Bristol	6,008	3	6
J. Barnes, Northfield, Birmingham ..	5,915	0	0
Cruwys and Hobrough, Gloucester	5,760	18	10
Johnson & Langley, Leicester	4,964	3	1
J. Byard & Sons,* Gloucester	4,880	0	0

* Accepted.

Gilfach Goch (Wales).—For the erection of two shops at Evanstown, Gilfach Goch, near Bridgend, for Messrs. Griffiths & Thomas. Mr. J. Morris Williams, architect, Blackmill, Bridgend:—

C. H. Cooksley, Miskin, Pontyclun	£2,220
J. Cox, Gilfach Goch	1,518
P. Gaylard,* Bridgend	1,422

* Accepted.

London.—For divisional offices at St. John's Hill, for the London School Board. Mr. T. J. Bailey, architect to the Board:—

Holloway Brothers, Ltd.	£6,243
E. Lawrance & Sons	6,230
W. Smith & Son	6,098
Lathey Brothers	6,061
Hudson Brothers	6,033
Rice & Son	5,999
E. P. Bulled & Co.	5,957
F. & H. F. Higgs	5,942
E. Triggs	5,846
J. & M. Patrick	5,779
Stimpson & Co.	5,770
W. Johnson & Co., Ltd.	5,620
W. H. Lorden & Son	5,432
J. Garrett & Son	5,424
J Appleby & Sons*	5,414

* Recommended for acceptance.

London.—For works at Essex Street School, for the London School Board. Mr. T. J. Bailey, architect to the Board:—

G. Parker	£3,600
J. T. Robey	3,315
Marchant & Hirst	3,245
R. P. Beattie	3,186
J. Willmott & Sons	3,166
E. Lawrence & Sons	3,152
Durbin & Katesmark	3,053
G. S. S. Williams & Son	3,035
J. W. Falkner & Sons	3,015
Johnson & Co *	2,931

* Recommended for acceptance.

London.—For the erection of a manual training centre at Berger Road School, for the London School Board. Mr. T. J. Bailey, architect to the Board:—

J. Grover & Son	£1,454
J. Allen & Sons, Ltd.	1,439
Marchant & Hirst	1,407
W. Gregar & Son	1,391
W. Shurmur & Sons, Ltd.	1 386
Clarke & Bracey	1,340
E. Lawrence & Sons	1,335
F. Bull	1,308
Patman & Fotheringham, Ltd.	1,290
Treasure & Son	1,246
W. M. Dabbs	1,221
J. Outhwaite & Son	1,205
C. Cox	1,168
J. Willmott & Sons	1,168
Lathey Brothers*	1,153

* Recommended for acceptance.

London.—For the erection of a special school, Ancona Road, for the London School Board. Mr. T. J. Bailey, architect to the Board:—

J. Garratt & Son	£4,451
F. & H. F. Higgs	4,416
Holliday & Greenwood, Ltd	4,318
W. Johnson & Co., Ltd.	4,296
E. Lawrance & Sons	4,296
Treasure & Son	4,242
E. P. Bulled & Co.	4,207
Stimpson & Co.	4,200
Rice & Son	4,199
Thomas & Edge	4,197
T. D. Leng	4,174
J. Smith & Sons, Ltd.	4,061
J. & C. Bowyer	4,055
J. & M. Patrick	4,049
J. Marsland & Sons	3,966
J. Appleby & Sons*	3,869

* Recommended for acceptance.

London, W.—For the erection of the first portion of St. James's Church, West Ealing, W. Mr. William Pywell, architect, Cumberland House, Hanwell, W.:—

S. F. Halliday	£6,812
Kingerlee & Sons	6,767
Dorey & Co.	6 620
J. Bentley	6,590
Goddard & Sons	6,435

Maldon (Essex)—For the erection of a hospital buildings, for the Maldon Joint Hospital Board. Mr. P. M. Beaumont, A.M.I.C.E., architect, Maldon:—

Knight, Maldon	£4,096	17	6
Watson, Cambridge	2,810	0	0
Banyard, Cambridge	3,777	0	0
T. Parkinton & Son, Ipswich	3,765	0	0
Smith & Son, Witham	3,755	0	0
R. Girling, Ipswich	3,695	0	0
Bray, Great Yarmouth	3,688	0	0
S. Parmenter, Braintree	3,657	0	0
Rayner, East Hanningfield	3,630	0	0
E. West, Chelmsford	3,583	0	0
Thurman, Ipswich	3,547	0	0
Johnson, Chelmsford	3,490	0	0
Moss, Southend	3,450	0	0
Potter, Chelmsford	3,400	0	0
Willmott, Ilford	3,400	0	0
Ward, Great Totham	3,395	15	6
Davey, Southend	3,357	0	0
McKay,* Clacton	3,290	0	0

* Accepted.

Sunderland.—For the erection of a church and schools, Monkwearmouth. Messrs. Potts & Son, architects, 57 John Street, Sunderland:—

Tiffin	£7,574	0	0
S. Ranken	6 998	0	0
J. Armitage	6,428	0	0
J. W. White	6,325	0	0
Shaftoe	5,959	0	0
Robertson & Sons	5,774	18	0
W. B. Cooper	5,469	0	0
J. B. Stott,* Monkwearmouth, Sunderland	5,449	19	4
Taylor & Welford	5,446	0	0

* Provisionally accepted.

[Continued on p. xiv.]

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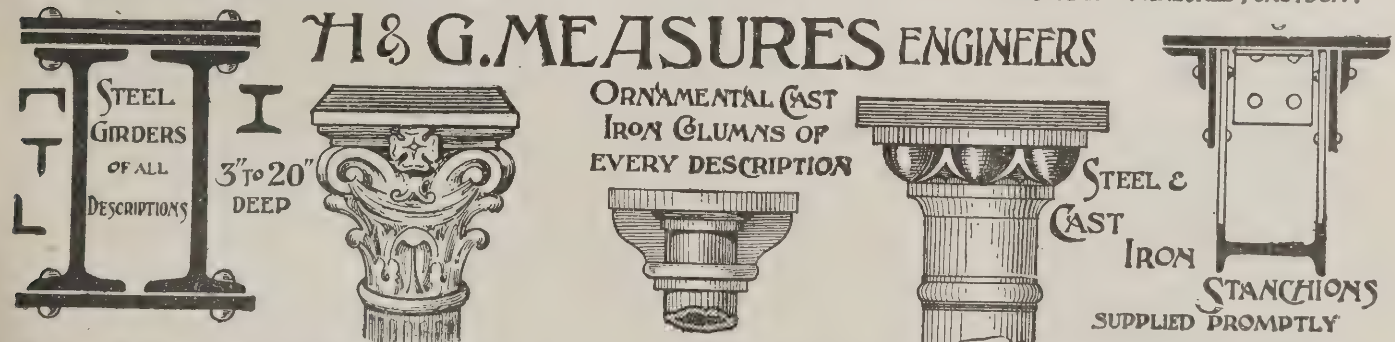
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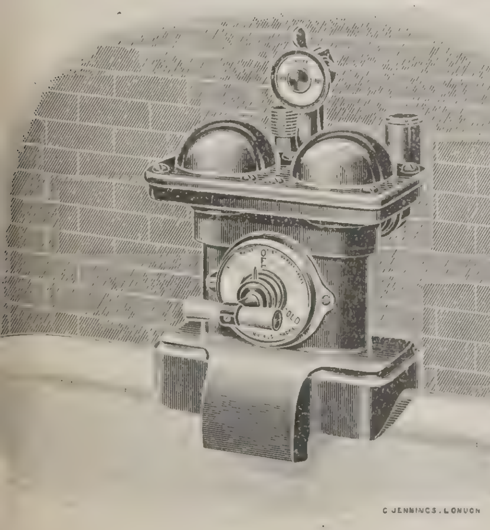

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Complete List of Contracts Open.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
		BUILDING:		
Feb.	19	Liscard, Cheshire—Chimney, &c.	Wallasey U.D.C.	J. H. Crowther, Engineer, Great Float, near Birkenhead.
,,	19	Woolwich—Cement, Bricks, &c.	Borough Council	F. Sumner, Borough Engineer, Maxey Road, Plumstead.
,,	19	Burton-on-Trent—Post Office	Commnrs. of H.M. Works, &c.	Secretary, H.M. Office of Works, Storey's Gate, S.W.
,,	19	Nelson, Lancs—Disinfector Buildings	Health Committee	B. Ball. Borough Engineer, Nelson, Lancs.
,,	19	Stalybridge—Electric Power Station	Tramways and Electricity Board	H A. Matear, Architect, The Temple, Liverpool.
,,	19	Peterborough—Portland Cement	City Council	J. W. Walshaw, City Surveyor, Guildhall, Peterborough.
,,	19	East Leake, near Loughborough, Leics—Extensions, &c., at School.	School Board	Barrowcliff & Allcock, Architects, Mill Street, Loughborough.
,,	20	Alresford, Hants—House	——	H. Y. Boreham, 75 Finsbury Pavement, London.
,,	20	Donegal—Creamery	Co-operative Dairy Society	D. C. Pearson, Donegal.
,,	20	Wick, Caithness, N.B.—Drill Shed, &c	——	Director of Works Department, Admiralty, S.W.
,,	20	Swansea—Bricks, &c.	Town Council	Borough Surveyor, 13 Somerset Place, Swansea.
,,	20	Bishop Auckland—Bricks, Cement, &c.	Urban District Council	Surveyor, Town Hall Buildings, Bishop Auckland.
,,	21	Buckley, Flints—Library	Urban District Council	J. H Davies & Sons 14 Newgate Street, Chester.
,,	21	Bexhill—Alterations to Electric Light Station	Corporation	Borough Surveyor, Town Hall, Bexhill.
,,	21	Middleton King's Lynn—Chapel	——	W. Jarvis & Son, Architects, Paradise Parade, King's Lynn.
,,	21	Pontardawe, Wales—House and Business Premises	——	D. J. Michael 97 Oxford Street, Swansea.
,,	21	Wheatley Hill, Durham—Seventy Houses	Weardale Steel, Coal and Coke Co., Ltd.	Company's Offices, Thornley Colliery Office, Thornley, R.S.O
,,	21	Greenwich—Jobbing Works	Borough Council	Borough Engineer, Town Hall, Greenwich Road, S.E.
,,	23	Caerau, Maesteg, Wales—Sixty-six Houses	Ferndale Navigation Bldng. Club	W. Y. Davies, Architect, Talbot Road, Maesteg.
,,	23	Dartford—Wall	Guardians	G. H. Tait, Architect, Lowfield Street, Dartford.
,,	23	Deal—Cement, &c.	Town Council	Town Clerk, Deal.
,,	23	London, E.C.—Lime, Cement, &c.	Finsbury Borough Council	Borough Surveyor, Town Hall, Rosebery Avenue, E.C
,,	23	London, S.E.—Works and Materials	Lewisham Borough Council	Surveyor, Town Hall, Catford.
,,	23	Rawtenstall, Lancs—Cement, Lime, &c.	Corporation	Borough Surveyor, Municipal Offices, Rawtenstall.
,,	23	Sowerby Bridge—Firebricks, &c.	Gasworks Committee	A. W. Bissell, Engineer, Gasworks, Sowerby Bridge.
,,	23	Batley—Central Stores	Co-operative Society, Ltd.	H. B Buckley, 85 Commercial Street, Batley.
,,	23	Ystradgynlais, Wales—Two Cottages	——	D Thomas, Railway Terrace, Ystradgynlais.
,,	23	Beckenham—Bricks, Cement, &c.	Urban District Council	F. Stevens, Clerk, Council's Office, Beckenham.
,,	24	Ticehurst, Sussex—Hospital	Rural District Council	J. C. L. Andrews, Clerk, Ticehurst.
,,	24	Northampton—Brickwork and Masonry	Corporation	A. Fidler, Borough Engineer, Guildhall, Northampton.
,,	24	Birkenhead—Forty-two Tenement Dwellings	Corporation	C Brownridge, Borough Surveyor, Town Hall, Birkenhead.
,,	24	Edinburgh—School	School Board	Mr. Carfrae, 3 Queen Street, Edinburgh.
,,	24	Halifax Warehouse	——	C. F. L. Horsfall & Son, Architects, Lord Street Chambers, Halifax
,,	24	Swindon—Offices, &c.	Great Western Railway Co.	Engineer, Reading Station.
,,	25	Cotford, near Taunton—Asylum Blocks	Committee of Visitors	G. T. Hine & Co., 35 Parliament Street, Westminster.
,,	25	Polkerris, near Par, Cornwall—Lifeboat House	Royal National Lifeboat Institution	H. E. Cooke, Hon. Secretary, Penellick, Par Station, R.S.O.
,,	25	Leavesden, Herts—Twenty-two Cottages	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
,,	25	London, S.E.—Enlarging Technical Institute	London County Council	Hart & Waterhouse, 1 Verulam Buildings. Gray's Inn. E.C.
,,	25	Long Reach, near Dartford—Rebuilding Pier House, &c.	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
,,	26	Chopwell and Longley Park, Durham—Forty Cottages	Consett Iron Co., Ltd.	C. E. Oliver, Architect, General Offices, Consett.
,,	26	Pembroke Dock—Masonic Hall	——	G. Morgan & Son, Architects, King Street, Carmarthen.
,,	27	Earlestown, Lancs—Lime, Bricks, &c.	Newton-in-Makerfield U.D.C.	Stores Clerk, Gasworks, Earlestown.
,,	27	Uzon, near Montrose Scotland—Coastguard Station	——	Watch-room, Coastguard Station, Montrose.
,,	27	Okehampton - Church	——	T. H. Chamings, Okehampton.
,,	28	Forres, Scotland—House	——	P. Fulton, Architect, Forres
,,	28	London, W.—Works and Materials	Paddington Borough Council	Borough Surveyor, Town Hall, Paddington, W.
,,	28	Fanad Head, Ireland—Coastguard Station	——	H. Williams, Secretary, Office of Public Works, Dublin.
		ENGINEERING:		
Feb.	19	Woolwich—Water Vans and Carts	Woolwich Borough Council	F. Sumner, Borough Engineer, Maxey Road, Plumstead.
,,	19	Plymouth—Wharf	Town Council	Sir J. Wolfe-Barry & Partners, 21 Delahay Street, Westminster.
,,	19	Liscard, Cheshire—Feed-water Softener, &c.	Wallasey U.D.C.	J H. Crowther, Engineer, Great Float, near Birkenhead.
,,	19	Exeter—Conduits, &c.	——	H. D. Munro, City Electrical Engineer, Exeter.
,,	19	Stonehaven, Scotland—Water Pipes	Town Council	G. Murdoch, Borough Surveyor, Stonehaven.
,,	20	Manchester—Ventilation of Subway	Electricity Committee	City Surveyor, Town Hall, Manchester.
,,	21	Sleaford, Lincs—Waterworks	Rural District Council	J. Clare, Engineer, Sleaford.
,,	21	Bexhill—Dynamo, &c.	Corporation	W. T. Le Feuvre, Borough Electrical Engineer, Electricity Works, Bexhill.
,,	21	Greenwich—Two Flushing Vans, &c.	Borough Council	Borough Engineer, Town Hall, Greenwich Road, S.E.
,,	21	Leicester—Retors Fittings, &c.	Gas and Electric Lighting Committee.	A. Colson, Engineer, Millstone Lane, Leicester.
,,	23	Plymouth—Reservoir	Lunatic Asylum Committee	F. Hawarth, Engineer, Municipal Buildings, Plymouth.
,,	23	Durham—Sewage Screen	Urban District Council	H. W. Taylor, Engineer, St. Nicholas Chbrs., Newcastle-on-Tyne.
,,	23	Moss Side, Lancs—Fire Engine, &c.	Urban District Council	H. B Longley, Engineer, Council Offices, Moss Side, Manchester.
,,	23	Silsden, near Keighley—Gasworks	Urban District Council	J. Driver, Clerk, Town Hall, Silsden.
,,	24	Oldham—Electrical Plant	Electricity Committee	A. Andrews, Gas and Water Offices, Oldham.
,,	24	Castle Cary and Langport, Somerset—Railway	Great Western Railway Co.	Engineer, Paddington Station, London.
,,	24	Maryport—Dredging	Harbour Commissioners	F. Kelly Clerk, Harbour Office, Maryport.
,,	25	Portsmouth—Pumps, &c.	Corporation	Superintendent, Electric Light Station, Gun Wharf Road, Portsmouth.
,,	25	Harlow, Essex—Electric Lighting	Lighting Committee	Borough Electrical Engineer, Harlow.
,,	26	Hull—Boilers, &c.	Electric Lighting Commtttee	T. G. Milner, City Treasurer, Town Hall, Hull.
,,	26	Bulawayo, Rhodesia—Electric Tramway	Municipal Council	Davis & Soper, 54 St. Mary Axe, E.C.
,,	27	Sunderland—Electrical Plant	Corporation	J. F. C. Snell, Borough Electrical Engineer, Town Hall, Sunderland.
,,	27	Dewsbury—Engineering Works, &c.	Joint Hospital Board	Holton & Fox, Architects, Corporation Street, Dewsbury.
,,	27	Mickleover—Septic Tank, &c.	——	J. S. Story, County Surveyor, County Offices, St. Mary's Gate, Derby.
,,	28	Singapore—Graving Dock	Tanjong Pagar Dock Co., Ltd.	Tanjong Pagar Dock Co., Ltd., 120 Fenchurch Street.
,,	28	Stockport—Electric Tramways	Tramways Committee	J. Atkinson, Borough Surveyor, Central Buildings, Stockport.
,,	28	Cockermouth—Waterworks	Rural District Council	J. B. Wilson, Engineer, Cockermouth.
		IRON AND STEEL:		
Feb.	19	Woolwich—Stores	Borough Council	F. Sumner, Borough Engineer, Maxey Road. Plumstead.
,,	19	Plymouth—Fire Hydrants, Cast-iron work, &c.	Corporation	F. Howarth, Water Engineer, Municipal Offices, Plymouth.
,,	20	Bishop Auckland—Stores	Urban District Council	Surveyor, Town Hall Buildings, Bishop Auckland.
,,	20	Swansea—Stores	Town Council	Borough Surveyor, 13 Somerset Place, Swansea.
,,	20	Swansea—Stores	Town Council	Waterworks Engineer, Guildhall, Swansea.
,,	21	Maldon, Essex—Pipes	Water Committee	T. R. Swales, Borough Engineer, Municipal Offices, Maldon.
,,	23	Sheffield—Materials	Highways & Sewerage Committee	C. F. Wike, City Surveyor, Town Hall, Sheffield.
,,	23	Beckenham—Stores	Urban District Council	F. Stevens, Clerk, Council Offices, Beckenham.
,,	23	Clacton-on-Sea—C.I. Well Cylinders	Urban District Council	S. Francis, Engineer, Town Hall, Clacton-on Sea.
,,	23	Edinburgh—Main Pipes	Gas Commissioners	W. R. Herring, Chief Engineer, New Street Works, Edinburgh.
,,	23	London, S.E.—Stores	Lewisham Borough Council	Surveyor, Town Hall, Catford.
,,	23	Rawtenstall, Lancs—Stores	Corporation	Borough Surveyor, Municipal Offices, Rawtenstall.
,,	23	Sowerby Bridge—Stores	Gasworks Committee	A. W. Bissell, Engineer, Gasworks, Sowerby Bridge.
,,	24	King's Heath, near Birmingham—Castings, &c.	King's Norton and Northfield U.D.C.	Surveyor, 23 Valentine Road, King's Heath.
,,	24	London, E.C.—Railway Stores	Bengal-Nagpur Rly. Co., Ltd.	Secretary, 132 Gresham House, Old Broad Street, E C.
,,	24	Stockton-on-Tees—Gas Mains	Gas Committee	W. Ford, Manager, Corporation Gasworks, Thompson Street, Stockton-on-Tees
,,	26	Ramsbottom, Lancs—Ironwork	Urban District Council	J Diggle, Civil Engineer, Hind Hill Street, Heywood.
,,	26	London, N.—Stores	Islington Borough Council	W. F. Dewey, Town Clerk, Town Hall, Upper Street, N.
,,	27	Earlestown, Lancs—Stores	Newton-in-Makerfield U.D.C.	Stores Clerk Gasworks, Earlestown.
,,	28	London, W.—Stores	Paddington Borough Council	Borough Surveyor, Town Hall, Paddington, W.
		PAINTING AND PLUMBING:		
Feb.	19	Plymouth—Lead Pipe and Pig, &c.	Corporation	F. Howarth, Water Engineer, Municipal Offices, Plymouth.
,,	20	Swansea—Plumbing Materials &c.	Town Council	Borough Surveyor, 13 Somerset Place, Swansea.
,,	21	Cottingham, near Hull—Painting	School Board	Botterill, Son & Bilson, 23 Parliament Street, Hull.
,,	23	London, E.C.—Plumber's Work, &c.	Finsbury Borough Council	Borough Surveyor, Town Hall, Rosebery Avenue, E.C.
,,	23	Sowerby Bridge—Paints, Oils, &c.	Gasworks Committee	A. W. Bissell, Engineer, Gasworks, Sowerby Bridge.
,,	24	King's Heath, Birmingham—Paints, Oils, &c.	King's Norton and Northfield U.D.C.	Surveyor, 23 Valentine Road, King's Heath.

Complete List of Contracts Open *—continued.*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	ROADS AND CARTAGE:		
Feb. 19	Stoke-upon-Trent—Road Materials	Corporation	A. Burton, Borough Surveyor, Town Hall, Stoke-upon-Trent.
„ 19	London, W. Making-up	Ealing Town Council	C. Jones, Borough Engineer, Town Hall, Ealing.
„ 19	Horncastle, Lincs Materials	Rural District Council	J. E. Chatterton, Clerk, Council Offices, Horncastle.
„ 19	Woolwich—Materials, &c.	Borough Council	F. Sumner, Borough Engineer Moxey Road, Plumstead.
„ 19	East Retford—Granite	Corporation	J. D. Kennedy, Borough Surveyor, East Retford.
„ 19	Hamilton, Scotland—Road Metal, &c.	—	A. Rankin, Road Surveyor, Airdrie.
„ 19	London, W.—Making-up	Ealing Town Council	C. Jones, Borough Engineer, Town Hall, Ealing, W.
„ 19	Nelson, Lancs - Street Works	Sewage and Streets Committee	B. Ball, Borough Surveyor, Nelson.
„ 20	Hardingstone, Northants -Materials	Rural District Council	Surveyor Council Offices, Hardingstone.
„ 20	Bishop Auckland - Goods and Materials, &c.	Urban District Council	Surveyor, Town Hall Buildings, Bishop Auckland.
„ 20	Swansea—Materials	Town Council	Borough Surveyor, 13 Somerset Place, Swansea.
„ 20	Clare, Suffolk—Granite	Rural District Council	H. H. Pettett Surveyor, Wash Farm, Hundon, Suffolk.
„ 20	Levenshulme, Lancs—Street Works	Urban District Council	J. Jepson, Guardian Chambers, Tiviot Dale, Stockport.
„ 21	Lewes—Materials, &c.	East Sussex County Council	F. J. Wood, County Surveyor, County Hall, Lewes
„ 21	Belper—Material	Rural District Council	R. C. Gordon, Surveyor, Duffield, near Derby.
„ 21	Greenwich—Jobbing Works	Borough Council	Borough Surveyor Town Hall, Greenwich Road, S.E.
„ 21	Bedford—Materials	Bedfordshire County Council	County Surveyor, Shire Hall Bedford.
„ 21	Lewes—Materials, &c.	East Sussex County Council	F. J. Wood, County Surveyor, County Hall, Lewes.
„ 21	Nottingham—Materials	Nottinghamshire County Council	E. P. Hooley, Shire Hall, Nottingham.
„ 21	Walsall—Road-making, &c.	Corporation	Borough Surveyor, Bridge Street, Walsall.
„ 23	London, E.C.—Hire of Horses	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
„ 23	London, E.C.—Materials, &c.	Finsbury Borough Council	Borough Surveyor, Town Hall, Rosebery Avenue, E C.
„ 23	Beckenham—Team Labour, Materials, &c.	Urban District Council	F. Stevens, Clerk Council's Office, Beckenham.
„ 23	Patricroft, Lancs—Cinders	Joint Drainage Committee	C. C. Hooley, Engineer, Union Offices, Patricroft.
„ 23	Sheffield—Labour and Materials	Highway & Sewerage Committee	G. F. Wike, City Surveyor, Town Hall, Sheffield.
„ 23	Cerne Abbas, Dorset—Labour and Materials	Rural District Council	G. Durden, District Surveyor, Hermitage.
„ 23	London, S.E.—Works and Materials	Lewisham Borough Council	Surveyor, Town Hall, Catford.
„ 23	Rawtenstall, Lancs—Road Metal, Cartage, &c.	Corporation	Borough Surveyor, Municipal Offices, Rawtenstall.
„ 23	Alnmouth—Taking-up and Repairing	Rural District Council	H. W. Walton, Clerk, Fenkle Street, Alnwick.
„ 23	Beverley, Yorks—Stone	Rural District Council	E. Picker, Surveyor, Beverley.
„ 23	Dundonald, Scotland—Road	—	J. Sturrock, jun., 65 King Street, Kilmarnock.
„ 24	Rawtenstall, Lancs—Bowling Green	Conservative Association	F Collinge, Conservative Club, Rawtenstall.
„ 24	Langley Moor, Durham—Materials, &c.	Brandon & Byshottles U.D.C.	J. M Kenzie, Surveyor, Langley Moor.
„ 24	Sowerby Bridge, Yorks—Repairs, &c.	Urban District Council	Surveyor, Town's Buildings, Sowerby Bridge.
„ 24	Walthamstow -Making-up	Urban District Council	G. W. Holmes, Engineer, Town Hall, Walthamstow.
„ 24	King's Heath, near Birmingham—Materials, &c.	King's Norton and Northfield U D.C.	Surveyor, 23 Valentine Road, King's Heath.
„ 24	Southall, Middlesex—Materials	Southall-Norwood U.D.C.	R. Brown, Engineer, Public Offices, Southall.
„ 25	London, S.W.—Keeping Burial Ground in Order	Wandsworth Borough Council	H. G. Hills, Town Clerk, Council House, Wandsworth, S.W.
„ 25	Leigh, Lancs—Materials, &c.	Corporation	T. Hunter, Borough Surveyor, Bank Chambers, Leigh, Lancs.
„ 25	Canterbury—Materials, &c.	Roads and Survey Committee	A. C. Turley, City Surveyor, Guildhall Street, Canterbury.
„ 25	Wanstead—Granite Edge Kerb	Urban District Council	Surveyor, Council Offices, Wanstead.
„ 25	Wanstead—Making-up	Urban District Council	Surveyor, Council Offices, Wanstead.
„ 26	London, N.—Works and Materials	Islington Borough Council	W. F. Dewey, Town Clerk, Town Hall, Upper Street, N.
„ 26	Cholton-cum-Hardy, Manchester—Tar Macadam	Withington U.D.C.	A. H. Mountain, Engineer, Town Hall, West Didsbury, Manchester.
„ 26	Litherland, Lancs—Macadam, &c.	Urban District Council	A. H. Carter, 25 Sefton Road, Litherland
„ 26	Tadcaster—Materials	Rural District Council	T. Scott, Council's Surveyor, Aberford, near Leeds.
„ 28	London, W.—Works and Materials	Paddington Borough Council	Borough Surveyor, Town Hall, Paddington, W.
	SANITARY:		
Feb. 19	Woolwich -Drain Pipes, Disinfectants, &c.	Borough Council	F. Sumner, Borough Engineer, Maxey Road, Plumstead.
„ 19	Norden, Lancs—Sewer	Urban District Council	J. W. Sunderland, 10 Church View, Norden.
„ 19	Hazel Grove, near Stockport—Sewers, &c.	Urban District Council	Sykes & Brady, 13 Warren Street, Stockport.
„ 19	Aston, Birmingham—Sewer	Aston Manor U.D.C.	G. H. Jack, Engineer, Council House, Albert Road, Aston Manor.
„ 19	Ecclesfield, near Sheffield—Sewers, &c.	Wortley R.D.C.	G. E. Beaumont, Surveyor, Grenoside, near Sheffield.
„ 19	Saltcoats, Scotland—Sewers	Town Council	J. & H. V. Eaglesham, Engineers, Wellington Chambers, Ayr.
„ 20	Bishop Auckland—Pipes, Disinfectants, &c.	Urban District Council	Surveyor, Town Hall Buildings, Bishop Auckland.
„ 20	Swansea—Disinfectants, Pipes, Lime, &c.	Town Council	Borough Surveyor, 13 Somerset Place, Swansea.
„ 20	Sedgefield, Durham—Sewerage and Sewage-Disposal	Rural District Council	D. Balfour & Sons, 3 St. Nicholas Buildings, Newcastle-on-Tyne.
„ 20	West Hartlepool—Sewers	Corporation	J. W. Brown Borough Surveyor, West Hartlepool.
„ 20	West Loughton, Lancs—Sewer	Urban District Council	T. Partington, 116 Market Street, West Loughton.
„ 21	Greenwich - Making Entries into Sewers, &c	Borough Council	Borough Surveyor, Town Hall, Greenwich Road, S.E.
„ 23	Broadstairs—Sewer Pipes, &c.	Urban District Council	H. Hurd, Town Surveyor, Broadstairs.
„ 23	London, E.C.—Stoneware Goods, Disinfectants, &c.	Finsbury Borough Council	Borough Surveyor, Town Hall, Rosebery Avenue, E.C.
„ 23	London, S.E.—Sewerage Jobbing Works, &c.	Lewisham Borough Council	Surveyor, Town Hall, Catford.
„ 23	Rawtenstall, Lancs—Pipes, Gulleys, Lime, &c.	Corporation	Borough Surveyor, Municipal Offices, Rawtenstall.
„ 23	Alnwick—Draining Roadway	Rural District Council	H. W. Walton, Clerk, Fenkle Street, Alnwick.
„ 23	Beckenham—Disinfectants, &c.	Urban District Council	F. Stevens, Clerk, Council's Office, Beckenham.
„ 23	Sheffield —Earthenware Pipes, Lime, &c.	Highways & Sewerage Committee	C. F. Wike, City Surveyor, Town Hall, Sheffield.
„ 24	Moretonhampstead—Sewerage Works	Rural District Council	G. D. Bellamy, 6A Courtenay Street, Plymouth.
„ 24	Southall, Middlesex—Lime, Aluminoferric, Scavenging, &c.	Urban District Council	R. Brown, Engineer, Public Offices, Southall.
„ 24	London, S.W.—Reconstruction of Sewer	London County Council	Engineer's Department, County Hall, Spring Gardens, S.W.
„ 24	King's Heath, near Birmingham—Glazed Pipes, Disinfectants	King's Norton and Northfield U.D.C.	Surveyor, 23 Valentine Road, King's Heath.
„ 25	Carshalton - Sewers	Urban District Council	W. W. Gale, Engineer, High Street, Carshalton.
„ 25	Erdington, near Birmingham—Sewers, &c.	Urban District Council	H. H. Humphries, Surveyor, Public Hall, Erdington Birmingham.
„ 25	Leigh, Lancs --Pipes, &c.	Corporation	T. Hunter, Borough Surveyor, Bank Chambers, Leigh, Lancs.
„ 25	Chesterton, Cambs—Sewerage Works	Rural District Council	Waters & Worrall, 2 Sydney Street, Cambridge.
	TIMBER:		
Feb 19	Woolwich—Timber	Borough Council	F. Sumner, Borough Engineer, Moxey Road, Plumstead.
„ 20	Swansea—Timber	Town Council	Borough Surveyor, 13 Somerset Place, Swansea.
„ 23	London, S.E.—Timber	Lewisham Borough Council	Surveyor, Town Hall, Catford.
„ 23	Rawtenstall, Lancs—Timber	Corporation	Borough Surveyor, Municipal Offices, Rawtenstall.
„ 24	King's Heath, near Birmingham—Fir and other Timber	King's Norton and Northfield U.D.C.	Surveyor, 23 Valentine Road, King's Heath.
„ 26	London, N.—Timber, &c.	Islington Borough Council	W. F. Dewey, Town Clerk, Town Hall, Upper Street, N.
„ 28	London, W.—Timber	Paddington Borough Council	Borough Surveyor, Town Hall, Paddington, W.
March 4	London, S.E.—English and Foreign Timber	Southwark Borough Council	Vestry Hall, 81 Borough Road, S.E.
„ 6	Egremont, Cheshire - Timber	Wallasey U.D.C	W. H. Travers, District Engineer, Public Offices, Egremont.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
Feb. 20	Sutton Coldfield -Town Hall	£50, £30, £20.	—	W. A. H. Clarry, Borough Surveyor, Council House, Sutton Coldfield.
„ 28	Bridgwater—Appliances for Silt Disposal	—	£2 2s.	W. T. Baker, Town Clerk, King Square, Bridgwater.
„ 27	Ynysmudw, Wales—Infant School	£10.	—	W. L. Evans, Clerk, Llangwicke School Board, Gwauncaegurwen, R.S.O.
„ 28	Cape Town—University Buildings	£400, £200, £100.	—	Agent-General for the Cape of Good Hope, London.
March 2	Whitley Bay—Board Schools	—	—	J. W. Mitchell, Clerk, Whitley and Monkseaton School Board, Council Buildings, Whitley Bay, R S.O.
„ 4	Chepping Wycombe—Town Hall, &c.	£105 and £26 5s.	—	T. J. Rushbrooke, 77 Easton Street, Wycombe.
„ 15	Hull Soldiers' Memorial	—	—	E. Laverack, Town Clerk, Town Hall, Hull.
„ 31	Hull—Extension of Town Hall	£300, £200, £100.	£5.	E. Laverack, Town Clerk, Town Hall, Hull.
„ 31	Castleford Yorkshire - Public Library	£15, £10.	—	H. A. Broadbent, Clerk to Urban District Council, Castleford, Yorkshire.
„ 31	Chelmsford—Infectious Diseases Hospital	£25, £10.	£1.	A. S. Duffield, 96 High Street, Chelmsford.
April 10	Yeovil—Laying-out Land for Town Hall, Municipal Buildings, Markets, &c.	£21, £10 10s.	—	Borough Surveyor, Yeovil.
„ 14	Blackpool—Technical Schools	£60, £25, £15.	£1 1s.	J. S. Brodie, Borough Surveyor, Town Hall, Blackpool.

Middleton (Lancs).—For the erection of new post-office and tenement offices in Long Street and Sadler Street, Middleton. Messrs. Stones & Stones, architects, 10 Richmond Terrace, Blackburn :—

J. Cronshaw, Blackburn	£3,060
Garforth Brothers, Mirfield	3,887
J. Sharples, Blackburn	3,835
D. Diggle, Heywood	3,777
J. Fowles & Sons, Heywood	3,750
G. W. Dawson, Manchester	3,733
E. Lewis & Sons, Shorrock Delph, Blackburn	3,700
R. Ridings	3,566
Ogden & Holland	3,511
Grundy, Sons & Co	3,430
W. & H. Thorpe, Rhodes, near Middleton	3,425
R. Partington & Sons	3,380
J. Partington, Middleton Junction, Manchester	3,370
T. Jackson & Sons	3,324
W. A. Peters & Sons,* Crossfield, Rochdale	3,268

* Accepted. [Rest of Middleton.]

Mundesley-on-Sea.—For the erection of a cottage residence. Messrs. Clare & Ross, architects, Chelmsford and London :—

Cornish & Gayner, North Walsham	£883	12
Wilkins & Randall, Mundesley-on-Sea	727	0
J. S. Smith,* Norwich	630	0

* Accepted.

New Ferry (Chester).—For the work of sewering and completing Beaconsfield Road, New Ferry, for the Lower Bebington Urban District Council :—

Hough, Lower Bebington	£2,049	6	7
Young, Lower Bebington	1,850	0	0
Exors. of W. F. Chadwick, Liverpool	1,736	17	11
Ireland, Birkenhead	1,666	12	9
Lawrence, Marr & Son, Liverpool	1,620	0	0
Ellis, Birkenhead	1,600	0	0
Warren, Wallasey	1,543	10	5
J. Barnes,* Lower Bedington	1,325	0	0

* Accepted.

Portslade-by-Sea (Sussex).—For street improvement works, for the Urban District Council. Mr. A. Taylor Allen, M.S.E., engineer and surveyor. Quantities by the surveyor :—

W. Hillman, Portslade-by-Sea	£3,286	5	4
Pedrette & Co., London	3,226	14	5
H. A. Chamber, Seaford	3,206	14	9
Parsons & Sons, Hove	3,021	0	0
E. H. King, Worthing	3,011	4	9
J. & T. Binns, Croydon	2,899	13	6
W. A. McKellar,* Hove	2,882	18	10

* Recommended for acceptance.

Upper Cwmtwrch (Wales).—For the erection of a new school at Rhiwfawr, Cwmllynfell, Upper Cwmtwrch, for the Llanguicke School Board. Mr. J. D. Rees, architect, Ystalyfera :—

Evans & Davies, Ystalyfera	£2,075	10
J. R. Williams, Ystalyfera	2,065	0
Roberts & Evans,* Brynamman, R.S.O.	1,970	0

* Accepted. [Architect's estimate, £2,000.]

Watlington (near Henley-on-Thames.)—For the laying of stoneware sewers, together with manholes' linspection shafts, and outfall works, to be constructed in Watlington for the purposes of the main drainage of the district, for the Henley Rural District Council. Messrs. John Taylor, Sons & Santo Crimp, engineers, 27 Great George Street, Westminster :—

E. Iles. jun., Wimbledon	£3,060	0	0
C. Ford, Harlesden, N.W.	3,048	0	0
F. W. Trimm, Eastleigh, Hants	2,957	0	0
W. Lutson, High Wycombe	2,926	0	0
A. G. Osenton, Tilehurst	2,872	0	0
Collier & Cattley, Reading	2,704	1	8
T. Free & Co., Bristol	2,629	0	0
T. Free & Sons, Maidenhead	2,558	0	0
G. Bell, Tottenham	2,460	0	0
Johnson & Langley, 20 Silver Arcade, Leicester	2,372	0	0
W. Mander, Leyton, Essex	2,344	5	0
Streeters & Todhunter, Godalming	2,316	9	11
H. Roberts, Ross	2,294	10	0
Reed Brothers, Wharf Road, London, N.	2,113	4	0
G. R. Mann,* High Street, Edgware	2,030	5	9
S. Wood, Bristol	1,798	0	6

* Accepted. [Engineer's estimate, £1,668.]

Worcester.—(A) For pulling down and rebuilding Nos. 55 to 58 High Street, and (B) forming new arcade, &c., from St. Swithin Street to Church Street, for Messrs Woodward. Messrs. Clare & Ross, architects, 1 West Street, Finsbury Circus, E.C., and Chelmsford. Quantities by Mr. H. M. Messenger, 16 Great George Street, Westminster, S.W. :—

	A.	B.
Thomas Vale, Stourport	£8,279	£4,763
Collins & Godfrey, Tewkesbury	8,273	4,410
Stokes Brothers, Worcester	8,135	4,679
Josh. Wood & Sons, Worcester	7,890	4,527
F. J. Briley, Birmingham	7,470	4,579
Bromage & Evans, Worcester	7,420	4,100
J. & A. Brazier, Bromsgrove	7,380	4,060
J. Barnsley & Sons Birmingham	7,188	4,200
W. Hopkins,* Birmingham	6,900	4,100

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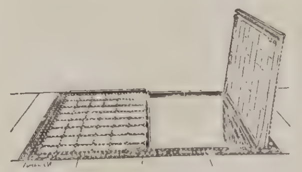

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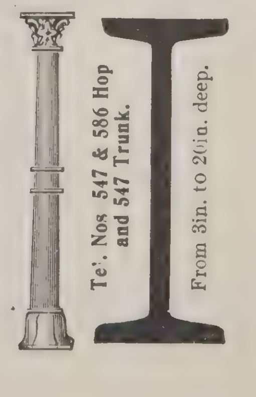

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Coming Events.

Wednesday, Feb. 18.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. A. Hunter Crawford on "The Building of a House"—III., 8 p.m.

INSTITUTION OF CIVIL ENGINEERS.—Students' visit to the works of Kew Bridge, in course of construction, at 2.30 p.m.

RUSKIN SOCIETY OF BIRMINGHAM.—Mr. M. E. Sadler, M.A., on "Applied Science and Social Control," 7.45 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION. —Students' Evening.

ARCHÆOLOGICAL ASSOCIATION.—Meeting at 8 p m.

Thursday, Feb. 19.

SOCIETY OF ARCHITECTS.—Mr. J. W. Woodall, M.A., and F. Windham, C.E., on "Acetylene Gas Lighting for Country Houses," 8 p.m.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—Mrs. Ray S. Lineham on "The Spirit of Ancient Egypt," 6.30 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Technical Demonstation on Cast Iron at Messrs. Tonge & Taggart, Windmill Lane, Sir John Rogerson's Quay, Dublin, at 4.30 p.m.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

Friday, Feb. 20.

ROYAL INSTITUTION.—Principal E. H. Griffiths on "The Measurement of Energy," 9 p.m.

SURVEYORS' INSTITUTION.—Annual Banquet at the Trocadero Restaurant, 7 p.m.

ART WORKERS' GUILD.—Mr J. D. Batten on "Dante's Illustrators," 8 p.m.

INSTITUTION OF MECHANICAL ENGINEERS.—Annual General Meeting. Prof. John Goodman on "Hydraulic Experiments on a Plunger Pump," and Mr. Thomas E. Stanton on "Experiments on the Efficiency of Centifugal Pump," 8 p.m.

ARCHITECTURAL ASSOCIATION.—Mr. Silvester Sparrow on "The Stained Glass of the Future," 7.30 p.m.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Mr. James Benson on "Leaded and Stained Glass Work," 8 p.m.

Saturday, Feb. 21.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE SCIENTIFIC SOCIETY.—Mr. James Andrews, M.I N.A., on "Water in Steam," 7.30 p.m.

BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Visit to the London County Council Works Department, Belvedere Road, Lambeth, at 3 p.m.

JUNIOR INSTITUTION OF ENGINEERS.—Visit to the East Greenwich Works of the South Metropolitan Gas Co., at 3 p.m

Monday, Feb. 23.

SURVEYORS' INSTITUTION—Mr. Henry Lovegrove on "Regulations for Protection from Fire," 8 p.m.

ROYAL PHILOSOPHICAL SOCIETY OF GLASGOW.—Mr. Alexander on "Notes on the City Churches of Glasgow," 8 p.m.

Tuesday, Feb. 24.

INSTITUTION OF CIVIL ENGINEERS.—Mr. George Frederick Zimmer, A.M.I.C.E., on "Mechanical Handling of Material," 8 p.m.

Wednesday Feb. 25.

NORTHERN ARCHITECTURAL ASSOCIATION.—Lecture by Mr. R. P. S. Twizell, A.R.I.B A.

ARCHITECTURAL ASSOCIATION (Discussion Section).—Mr. W. L. Trant Brown on "Valuations," 7.30 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. Daniel Macfie on "Artificial Lighting in the Nineteenth Century," 8 p.m.

Thursday, Feb. 26.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Technical Demonstration on Limes, Gypsum, Lathing, Plastering and Scagliola, at Messrs. George Rome & Co., 3 Lombard Street, Westland Row, Dublin, at 4 p.m.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—Mr. Frederick Musto, A.R.I.B.A., on "Street Improvements in Leeds and elsewhere," 6.30 p.m.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

Saturday, Feb. 28.

BUILDERS' FOREMEN'S ASSOCIATION.—Mr. A. S. E. Ackerman, A.M.I.C.E. M.S.I, on "Some Notes on Sanitary Arrangements and Testing."

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TO CONTRIBUTORS.

THE EDITOR will be pleased to consider any articles, illustrated or otherwise, dealing with old and new buildings, methods of construction, or other matter of an architectural character. He will also be glad to consider architectural photographs and sketches (the latter preferably in black and white) and measured drawings of work in this country or abroad. News items of interest to architects and builders will also be considered, provided the name and address of the sender are given; no notice will be taken of anonymous contributions. All communications should be addressed to the Editor of the BUILDERS' JOURNAL, 9, East Harding Street, E.C.

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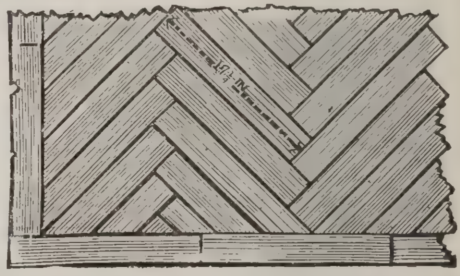

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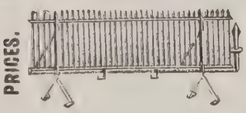

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THE

BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

Feb. 25, 1903. Vol. 17, No. 420. 9, East Harding Street, E.C.

Empty Niches. WE take a pleasant pride in the fact that sculpture is a revived art among us, full of life and suggestiveness. Possibly there is a greater era before us, when the decoration of public buildings with fine statues will be universal. If so, architects are far-seeing men, for our buildings have no lack of niches in them for the statues of to-morrow! Tradition in some things may be dead, but surely the inheritance of this niche-providing faculty is patent to everyone, as true of this generation as of the last, like a silent power which directs men's minds towards futurity. These empty niches look down on us from all sides. What a surprising number there are on St. Mary's Church in the Strand, on the heavy rusticated walls of Somerset House, at the corners of the Law Courts, and on our churches, free libraries, and other public buildings —those empty niches among a world of honoured men! The new Gaiety Theatre has some, we notice. Architects might, perhaps, take the hint. Certain lights of the "Art Nouveau" school have the ingenious argument that though we of to day may not like their work it will be held in admiration by our children's children, whose perceptions are to be trained by its glorious colours and its flowing lines. Presumably the niche-building architect has similar gleams of the future. Meanwhile there is a lack of statues. Would it not be far better to curtail this zeal for niches, and provide a few quiet places where a medallion might be put in honour of a worthy man?

Balzac the Client. AT Ville d'Avray a house was built for M. Honoré de Balzac, the well-known novelist: the house in which, many years later, Gambetta died. Like numerous other clients, M. Balzac had very definite ideas of what a house should be. One of his ideas was that rooms should be large and airy—how indeed should the poet's soul be compassed by the small measure of a common villa? He ordered the size of the rooms to be increased. This pleased him, and then—contentment not being of this world—had them made still larger, until at last they filled the whole house. Clients of this kind should be their own architects in fact as well as in assumption. M. Balzac's architect had suggested that, though large rooms were very desirable, one had to think of the staircase. Perhaps it was not true that the building was finished before the novelist realized he could only reach the upper storeys by a step-ladder, but the staircase had to be built outside!

The Right and the Wrong. QUESTIONS arise in every art when it is difficult to decide which method is the right one: and in many such cases the choice is very much a matter of personal opinion or taste. The purist louldly declaims for absolute integrity of treatment, while, on the other hand, the free worker is just as zealous in his contentions for licence. Perhaps the mean between the two is the best method, after all. For instance, last week Mr. F. Hamilton Jackson lectured before the Society of Designers on intarsia and marquetry, and the point arose as to whether it was legitimate to engrave the work—intarsia is a kind of inlay, while marquetry is a mosaic of veneer. Mr. Aumonier took up the purist's standpoint and considered that Mr. Stephen Webb's designs were spoilt by this engraving, which was quite foreign to the work, and that every desirable amount of detail could be given with saw cuts: while, on the other hand, it was held that shading the wood with hot sand, staining it, or engraving it with fine lines which could not be got by any other method, were perfectly legitimate. That is the point. It is one applicable to many other arts. For ourselves we think that primarily the limitations of every material should be strictly respected, and that it is foolish to try to copy degrees of fineness which could not be obtained in a direct manner: but there must be some latitude in these things. It is contended that in leaded glass the lead itself should form all the outlines. That is a good and approved principle—yet by painting lines of the figure, for instance, on the glass an effect is secured which would not otherwise be possible. Both are lines against light—one in lead, the other in glass—and it is impossible to say that either is absolutely right or wrong. Yet there are unwritten canons which the works of past ages have established, even though egotism affects to disregard them, being engrossed with its own self-styled genius. These canons demand recognition.

The Exeter Cathedral Glass. As already announced in our columns, it is proposed to remove the glass in the west window of Exeter Cathedral and replace it with other as a memorial to the late Archbishop Temple. Nowadays there is an outcry about everything, and this proposal has found a fervid antagonist in Mr. Stuart A. Moore, F.S.A. There is no need, however, for any outcry about the removal of this glass. William Peckitt did it in the eighteenth century, and consequently it is very poor work. It appears that the idea was to have a border around the seven figures consisting of the coats-of-arms of subscribers, the border running up into the great wheel, where on a foundation of ducal and baronial shields the less impressive coats of baronets should float in the "diluted rays" of the setting sun. The Chancellor of the Cathedral observes that the then Dean and Chapter were good financiers. "They made a profit on the Archbishops' arms of two guineas, a guinea each on the arms of each peer, and on the arms of eight of the baronets and the four members of Parliament of a guinea and a half each. But the business side of Mr. Peckitt's head was better than the artistic side. He brought in a bill for extras which more than swallowed up the savings." It is opportune to refer to Mr. Drake's lecture on the glass in Exeter Cathedral. Speaking of the great east window and its attempted restoration by Peckitt in 1761, when heads of the true Georgian type were put on the figures and the canopies much tampered with, he says: "Mention of these figures reminds me of a curious freak of Peckitt of west window renown. In the light next the centre on the south side is a bishop; his head is covered, not with a mitre, but with a piece of a broken canopy from another window which to Peckitt seemed liked a mitre." This is the glass which occupies Grandisson's fine window. True, there is an historical interest in it, but the window is worthy of a better filling. Peckitt's glass is, we understand, intended to be put in the chapter-house. That is fitting enough. What an inestimable benefit it would be if we had some miles of sheds where this dull but historical work could be housed, provided no evil-minded purists were allowed to turn incendiaries.

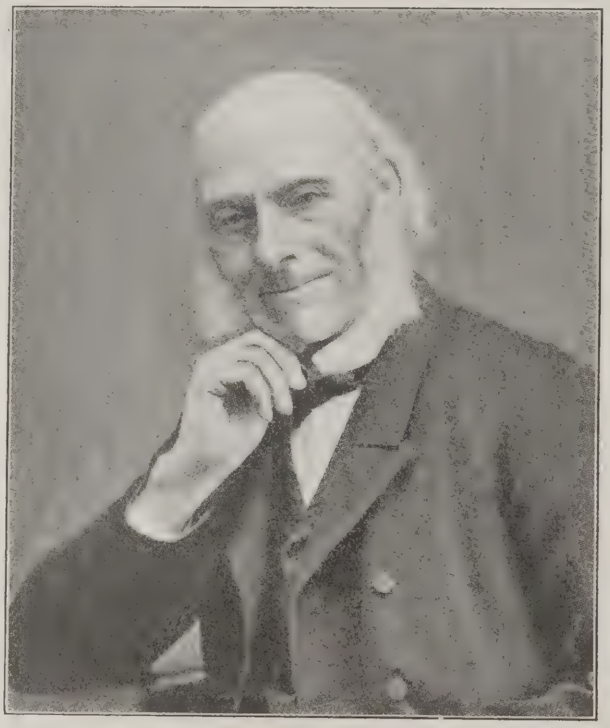
THE LATE MR. F. C. PENROSE.

AN APPRECIATION BY PROF. R. ELSEY SMITH.

IN Francis Cranmer Penrose the architectural profession has lost a member occupying an almost unique position and one whom it could ill spare. It is not so much that he was known as certainly the most accomplished student of Greek architecture of our nationality, and one of the greatest authorities on this profoundly interesting subject, as that he was and remained till the very end of his life an earnest, painstaking and diligent student. He belonged indeed to a period essentially remote from the feverish rush of modern life, when many a student feels that a period of three or four years after the ordinary school career is a somewhat long period to devote to the special study necessary to equip him for the practice of an arduous and complex profession. His training was received and much of the work with which his name is imperishably associated was carried out in the first half of the last century, when affairs were conducted with more deliberation, and before the facilities due to the steamer and the express had brought all parts of Europe at least within such easy reach as to render flying visits to this country and that a substitute for the now old-fashioned grand tour and protracted study on the Continent.

Students with the natural gifts, the wide cultivation and the disposition to enter upon such serious investigations as were undertaken by Mr. Penrose must always be rare, but there is, perhaps, with the stress of modern professional life less likelihood of their appearing in the future.

It is scarcely necessary to refer in any detailed way to the work Mr. Penrose accomplished in connection with the investigations into the principles of Athenian architecture, but it is perhaps hardly realized to what an extent, as circumstances permitted, he seized opportunities of resuming and extending studies which commenced with an examination extending over many months of the buildings that lay scattered in the Acropolis at Athens and in particular of the Parthenon.



THE LATE F. C. PENROSE, M.A., F.R.S., LITT.D., D.C.L., F.S.A., F.R.I.B.A.,
Knight of the Order of the Saviour in Greece, Antiquary to the Royal Academy, P.R.I.B.A. 1894–1896, Royal Gold Medallist, 1883.

At the time when I was first privileged to have any intimate acquaintance with Mr. Penrose he was residing in Athens as the first director of the newly-established British Archæological School; and though even at that time he had nearly reached the span of three score years and ten he was engaged with all the enthusiasm and energy of a man of half his age, and with a painstaking care all his own in a further series of investigations with a view to the preparation of a second edition of his monumental work which shortly afterwards appeared.

Anyone who has studied this work in either edition must have been impressed with the infinite pains taken to ensure accuracy; and after seeing Mr. Penrose at work on the buildings one could not but be struck with the extraordinarily intimate and accurate knowledge he displayed of the details of a great variety of buildings and the trouble that was taken where necessary to verify any doubtful fact or dimension.

This was by no means his last visit to Athens, and but a few years ago he journeyed thither to attend the investigations of the international commission upon the present condition of the Parthenon.

That he remained a student to the very end is evidenced by a paper read within the last few months before the R.I.B.A.; and it is to be hoped that during the last few years, during which he had retired from active practice, and had in particular ceased to be responsible for the care of Wren's great fabric, he may have been able to complete, or at least carry forward, other investigations into certain of the Greek curves for which he had prepared a mass of data.

But architecture was by no means his only study, and as an astronomer he spent many hours and many whole nights in a series of observations made in his observatory erected in the garden of the charming house he had built for himself in the high ground south of the Ridgway, at Wimbledon; he was in particular interested in the problems in which the science of astronomy and the art or architecture are intimately related, and in connection with which at least one special visit was made to Greece. And it was in recognition of his investigations into the orientation of temples that he was elected a Fellow of the Royal Society, a distinction attained very rarely by members of our profession.

If the profession has lost an ornament in one who had fittingly received the highest distinctions that could be bestowed by the hands of his brother architects, and in recognition of his distinguished services had been decorated by the King of Greece, many of its individual members—and a far wider circle, indeed—are mourning the loss of a valued friend.

Mr. Penrose's disposition was a retiring one, but he was ever ready to lend his counsel and advice to any brother architect or student who came to him for it, and he devoted the same unstinted trouble to clearing up any difficulties in such a case as was usual with him in more important matters.

During my visit to Greece about sixteen years ago a short tour was arranged with Mr. Penrose and other members of his family, and it is impossible for me to forget the interest which his presence and companionship gave to this trip. The ground covered was not new to him; indeed, one was struck by the intimate knowledge not only of the buildings but of the topography and the natural features of the country through which we journeyed. Of this intimate knowledge we had constant evidence, as well as of the cheery good humour with which the various *contretemps* almost inevitable in such an expedition through the less known parts of Greece were met. Not, perhaps, less surprising was the wonderful energy which sustained him through long days of travel, and found him ever eager at each halting place to visit any point of interest, or to start at once upon some drawing, most often in water colour, of which he was extremely fond. Numerous and most interesting are the records made by his pencil and brush on his various visits; and though some were but slight they include many beautiful and carefully finished drawings of the buildings and scenery he loved so well, not only in Greece and Italy, but in our own country too, of whose architecture also he was a diligent and constant student.

Of his intimate family life it is not fitting that I should speak; but to his many friends, while sympathising with the double affliction to those who are bereaved, it cannot but seem that there is something appropriate and consoling in the fact that Mr. Penrose and she who for so many years was his constant companion should have passed almost side by side into the great hereafter.

Lord Dillon says: "It may interest some of those who were brought up on Mrs. Markham's 'England' to know that the late Mr. Penrose was the original of the intelligent 'George' who so often asks for more information on various points of history. The late Sir George Scharf, K.C.B., to whom the 'History' was indebted for its exquisite illustrations, is my authority for this identification." But the Rev. G. Biscoe Oldfield corrects this. He says: "The late Sir George Scharf was mistaken in identifying Mr. Penrose with 'George,' for Mr. Penrose himself told me that he was the original of 'Little Mary'."

About twenty-five years ago, when Mr. Penrose was architect to St. Paul's, a party of members of the Institute paid a visit to the cathedral in connection with one of their conferences. Particular care had been taken to prevent any outsiders joining in the round of inspection: but, somehow or other, two uninvited persons managed to pass unnoticed among the party. They took the greatest interest in everything: so much so that they were the last to leave the chapter-house. Mr. Penrose waited to close the door, and as one of the unbidden guests passed out he expressed his thanks for the privilege of looking over the cathedral; he also attempted to put a coin into Mr. Penrose's hand (thinking he was the guardian): but the architect discreetly managed to cough and put his hand to his mouth. The visitor then understood, and probably felt uncomfortable.

The remains of Mr. Penrose were interred on Thursday last at Christ Church Cemetery, Copse Hill, Wimbledon. Mr. Aston Webb was among those present

LONDON BUILDING ACTS (AMENDMENT) BILL, 1903.

By **EDWIN B. B. NEWTON, A.M.I.C.E., F.S.I.**

THIS Bill consists of four parts, twenty-eight sections and two schedules, and is proposed in amendment, as regards "the provision and maintenance of proper means of escape in case of fire from buildings in London, and the reduction of the risk of fire in the case of such buildings," of the London Building Act, 1894.

Its appearance at the present juncture is probably due to the recent serious fire in Queen Victoria Street, but some such provisions as those in the Bill have been contemplated for a considerable time.

Definitions.

Part 1 deals with preliminary matters, including the interpretation of various words in the Bill.

"Owner" is so defined as to include an agent or a trustee, except as regards the payment of fees to the district surveyor under section 24, where the word is to have the meaning assigned to it by section 5 of the Act of 1894.

A "high building" is to be one with the floor of a storey at more than 50ft. above the footway or ground.

A "new high building" is to be one which shall not have been "*bona-fide* and substantially commenced at the date of the passing of this Act," and any existing building altered, &c., into a "high building."

An "existing high building" is to be any high building which is not a "new high building."

An "upper storey" is to be a storey whose floor is more than 50ft. above the footway or ground, &c.

A "new building" is to be (*a*) "any building erected," (*b*) "any building one-half of which has been taken down and re-erected," and (*c*) "any space between walls and buildings which is roofed or commenced to be roofed"—"after the passing of this Act."

This definition is the same as that in the Act of 1894, except that one refers to 1894 and the other to whatever date (if any) on which the new Bill may become law.

There is in the Act of 1894 no definition of the word "building," and the same remark applies to the new Bill. It will be remembered that in the Bill of 1894 the following definition of the word "building" was proposed: "An erection comprising a cubical space defined by walls posts piers columns or other supports or enclosures and a roof whether the erection is wholly enclosed or not and whether it is fixed on permanent foundations or not and of whatever material the supports enclosures or roof may be composed."

This definition was not incorporated in the Act of 1894, and there have been what to some may appear conflicting decisions as to the meaning of the word in certain cases.

Part 2 deals with "means of escape in case of fire."

New High Buildings.

Section 63 of the London Building Act, 1894, enacts that "every new building exceeding 60ft. in height shall be provided on the storeys, the upper surface of the floor whereof is above 60ft. from the street level, with such means of escape in the case of fire, for the persons dwelling or employed therein as can be reasonably required under the circumstances of the case, and no such storeys of such building shall be occupied until the Council* shall have issued a certificate that the provisions of this section have been complied with in relation thereto."

The terms of sections 6, 7 and 8 of the new Bill of 1903 ensure the provision and maintenance of means of escape in case of fire from all new high buildings, the non-occupation of upper storeys of such buildings until certified by the Council to have such a provision, and the revocation of any certificate in case of any alteration in the conditions under which it may have been granted.

Sections 6 and 7 are much the same in effect as section 63 of the Act of 1894, but include of course (by reason of the definition in the new Bill of "high building") buildings 10ft. less in height. Excellent as the sections are in their intentions, they are of a very arbitrary character. The means of escape are to be "to the satisfaction" of the Council and such "as shall be reasonably practicable"; there is no indication as to what is here meant, and requirements so loosely described as these may mean anything from a bare iron ladder to a first-rate and expensive staircase or other means of descent in a specially constructed annexe to a main building, everything being of a fire-resisting character.

There is no provision for any appeal from the requirements of the Council under sections 6, 7, 8, and 9 (*post*), so that an owner of a new high building may be continually subject to requirements of the Council, which may be such as they entirely in their own discretion may enforce, and as they may apparently from time to time alter, vary and make more stringent, at their own will.

In section 7 the word "dwelling" is used, but there is no definition of it in the Bill. Section 5 (25) of the Act of 1894 contains a definition of "dwelling-house," but there is a slight difference in the meaning of the terms.

A perusal of section 8 gives rise to an impression that there may be a lack of finality in the requirements of the Council which may prove unduly vexatious and harassing. It provides that in case of a change in the condition of a high building or a part of it, the Council may revoke its certificate. Wherever possible a requirement should be one of a definite and conclusive nature.

The duty of seeing that all escapes are kept in good order and condition would appear to fall on the district surveyor, as section 15 states that it shall be his duty to ascertain and notify to the Council every building within his district to which Part 2 applies. Section 23 gives to him and "any officer of the Council duly authorised by the Council in writing" the right to "enter, inspect, and examine at all reasonable times any building," and section 24 enacts that the district surveyor shall be paid the fees detailed in the second schedule.

It is somewhat peculiar to require that the works shall all be executed "to the satisfaction of the Council." It would seem much better in the case of matters like these arising out of the Act, and purely of a technical character, that they should be carried out to the satisfaction of some permanent expert official of the Council, or be regulated by by-laws which might be administered by the district or the borough surveyor when there would be a greater security against variation in requirements arising out of changes in the composition of an elective body.

Those who have had occasion to make application to the Council in respect of some matters as to which the Council possess a jurisdiction under the Acts of 1894 and 1878 know what delay, inconvenience and dissatisfaction arise, through no fault of the Council or their officials, by reason of there being no official whom an architect making a proposal can consult, and from whom the architect can obtain at a single interview an exact, a definite and a final specification of the requirements which will be necessary to be carried out, and the condition which must be observed before any proposals can be regarded as satisfactory and approved.

The provision of an appeal to a tribunal from the decision of such a single official of the Council as suggested above, would amply safeguard the interests of the public and ensure that the power vested in the official should not be exercised unreasonably or arbitrarily.

Section 9 requires internal staircases designed for providing means of escape from a new high building to be constructed, together with their walls, partitions, doorways and frames, of fire-resisting material.

This seems entirely satisfactory.

Existing High Buildings.

Section 10 requires the owner of every existing high building other than a dwelling-house, occupied as such by not more than one family, to submit on or before January 1st, 1905, particulars of the means of escape then existing and those, if any, proposed.

The Council may then approve or disapprove these means of escape and, in the latter event, require others.

The owner is permitted within two months to dissent from any condition or requirement of the Council, and either party may within fourteen days appeal to arbitration under the Act. If the owner fail to dissent within such two months he is deemed to assent.

The Arbitration Clasues

are contained in schedule 1. Each party is to appoint within twenty-eight days an arbitrator, and the two arbitrators must before entering on the reference appoint an umpire.

This procedure, though likely to be fair, will with equal probability be prolonged and tedious, and will not ensure uniformity in regulations. A tribunal of appeal such as, or constituted similarly to, the one under the Act of 1894 would appear efficient, quicker in its action, and without doubt more uniform in its views than a series of changing bodies.

It may be fairly stated to be a generally accepted opinion that the tribunal of appeal appointed in accordance with the Act of 1894 has worked satisfactorily, and that it possesses the confidence of professional men.

The owner may, up to six months after providing means of escape under this section, apply to the county court, who may apportion the expense or a part of it upon the occupier.

Section 11 requires that on and after January 1st, 1908, the provisions of the foregoing sections 6, 7, 8 and 9 shall apply to all existing high buildings, provided that—

(*a*) Where section 8, touching "means of escape to be provided from new high buildings," is to be applied to the purposes of section 11, it shall be subject to the provisions of section 10 (*ante*).

(*b*) The "means of escape" shall, on a difference, be those determined by such arbitration under section 10; and

(*c*) The Council's certificate under section 7 shall be one that the means of escape determined by the award have been provided.

The probable severity of sections 10 and 11 is manifest, and in some cases, unless the Council are content to reduce their requirements to mere matters of form, which is hardly likely to be the case, compliance with the sections will be impossible, and necessitate the closing for certain purposes of the upper storeys of such high buildings under section 13.

In spite of the high value which must be set upon human life, and the corresponding necessity for very great care and precaution being exercised towards its preservation, there is nevertheless a limit to even this value, and it is very questionable whether the increased security which would be gained would be at all commensurate with the expense, loss and difficulties which the enforcement of sections so arbitrary and comprehensive as these would involve.

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* London County Council throughout this article unless otherwise distinctly stated.

Assuming the Bill to become law in 1903, within a period of between four and five years all existing high buildings would have to be brought into conformity with the requirements of the County Council. Were it definitely known that these requirements were to be comparatively easy of execution, four years would be short time for owners to arrange to do the necessary work; and as, instead, the requirements may be most difficult to comply with and involve almost re-building some premises, fifteen years or even twenty years would not be too long a time to allow.

New Buildings.

Section 12 requires that every new building (not being a dwelling-house occupied as such by not more than one family) in which sleeping accommodation is provided for more than thirty persons, or in which more than thirty persons are employed, shall be provided with such means of escape in case of fire "as shall be reasonably practicable," which means of escape shall be maintained in good order. Such new buildings must be certified by the Council to have such means of escape, &c., and in case of any alteration in the conditions under which the certificate may have been granted it is to be subject to revocation under section 8 applying to new high buildings.

Here again the requirements of the Council may be anything whatsoever. Some indication of the necessary means of escape should either be given in the Act or provision made in this for the subsequent drafting of by-laws describing a regular code of such requirements. A building owner ought in every case to know beforehand, at any rate to some extent, on what lines he will have to arrange his structure, and to what purposes it may be applied, without the fear of erecting a building for a definite purpose one year, only to have it condemned the next on account of a change in the opinion (possibly arising out of a change in the composition) of a governing body.*

The draft clause for this section originally proposed used the words "forty persons" in lieu of "thirty persons," but the latter words were substituted at the meeting of the Council approving the submission of the Bill to Parliament.

Section 9 (*ante*) is to govern the construction of the internal staircases in such "new buildings," and sections 10 and 11 (*ante*) are to apply to every existing building of the same character as the "new" building referred to in section 12.

My remarks on those sections apply similarly here.

Closing of Unsuitable Buildings.

Section 13 provides that when adequate means of escape cannot be provided from existing high building or existing buildings such as are described in the last paragraph but one of this article, a petty sessional court may by order prohibit the use in contravention of this Act—

(1) Of an upper storey of an existing high building or any room therein as a dwelling, for employment, or for resort, &c., for any persons.

(2) Of the whole or part of an existing building (not being a dwelling-house occupied as such by not more than one family and not being a new building) for more than thirty persons to sleep therein or for the employment therein of more than thirty persons.

Section 14 requires a register of orders made under the last section to be kept.

District Surveyor.

Section 15 has been referred to in the middle column of the preceding page.

Factories and Workshops and Common Lodging-Houses.

Section 16 exempts any building the whole of which is a factory or workshop within section 14 of the Factory and Workshops Act, 1901, or within any by-laws under that Act, and also any common lodging-house within any statute relating to such houses in London from Part 2 of this Act.

There are published certain statements as to the general requirements of the Council under the Factory and Workshops Act, 1901 (originally made under the Acts of 1891 and 1895) as to means of escape from fire, and a perusal of these is interesting. Little amendment could fairly be asked for where the provisions of these statements are complied with.

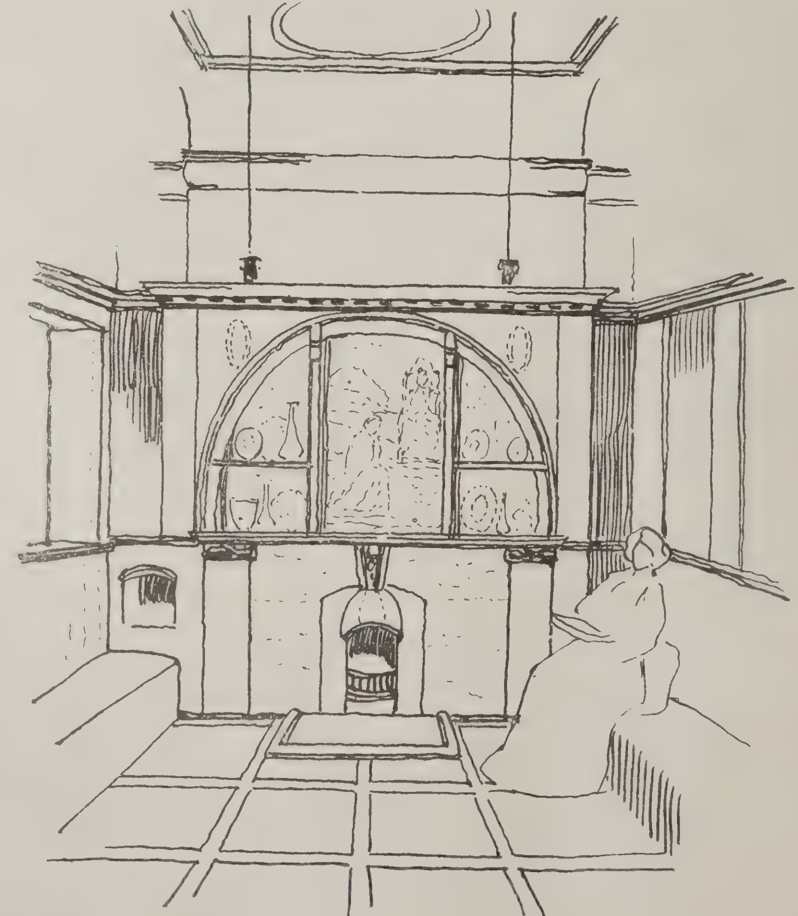
(To be concluded.)

An important resolution was adopted on Tuesday last week by the members of the Streets Committee of the City Corporation with reference to the unanimous demonstrations of opposition which have been manifested throughout the City with respect to the London Building Acts (Amendment) Bill. The resolution was: "That, having regard to the general opposition throughout London to the London Building Acts (Amendment) Bill, a representation be made to the London County Council asking that body to withdraw the measure and to arrange a conference with the Corporation and the metropolitan borough councils to consider the whole subject, with a view, if possible, to a Bill being framed that will effect the object without needlessly oppressing property owners." The City Corporation will be asked to approve this proposition.

On February 17th a special committee presented to the Paddington Borough Council an elaborate report on the Bill. The vital question, in the opinion of the committee, is the appointment of the district surveyors, whose duties the Bill promoted by the County Council seeks to enlarge. The committee submit that the metropolitan, City and borough councils should appoint the district surveyors, and that as those councils are responsible for the sanitary supervision of every house in their respective districts, they should specially have the control over construction as well. The committee maintain that a system under which one authority approves the drains and another the bricks and timbers is "a bad one in principle, and not conducive to economy, public policy or convenience." Further, it is pointed out (1) that there is no reason why the metropolitan borough councils should be denied functions possessed by provincial municipalities; (2) that the London County Council, with whom the appointment and limited control of district surveyors now rests, might still frame rules for the general guidance of those officials and continue in touch with them by—as in the case of local medical officers of health and sanitary inspectors—paying half their salaries.

The town clerk of Paddington (Mr. A. W. J. Russell) was instructed by his council to write to the other metropolitan councils asking if they were agreeable to appoint delegates to attend a conference to consider the subject of the proposed transfer of powers under the London Building Act as indicated. If a majority prove favourable a conference will be held at the Paddington Town Hall.

The Lord Mayor, in response to numerous requisitions and resolutions of ward meetings, has given directions for convening a public meeting of the citizens at Guildhall on Thursday, March 5th, at noon, to protest against the provisions of the Bill.



BILLIARD-ROOM FIREPLACE, PARK CIRCUS, GLASGOW.
J. SALMON AND SON, ARCHITECTS.

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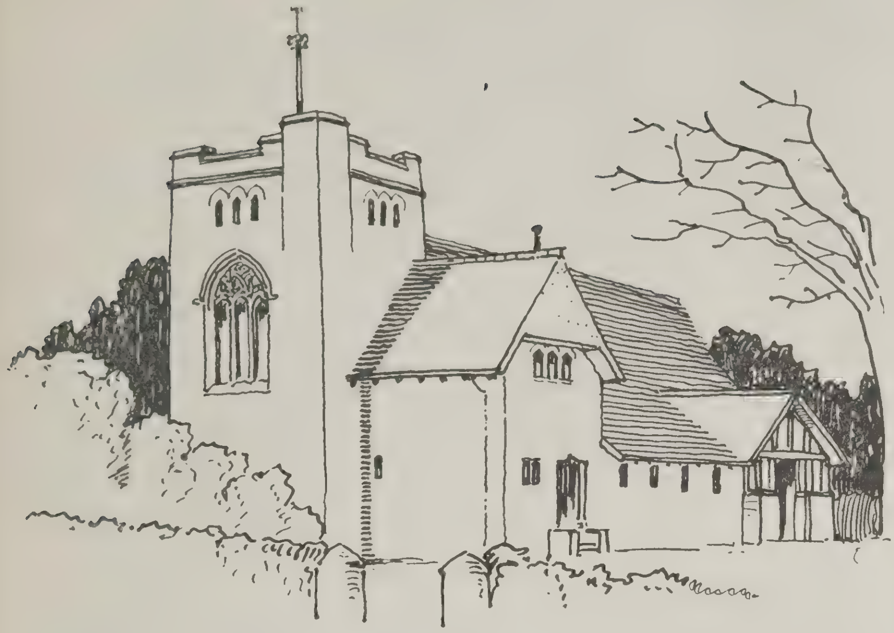
* See the remarks on preceding page.



ST. MICHAEL'S CHURCH, CARNTYNE, GLASGOW. H. E. CLIFFORD ARCHITECT.

GLASGOW FINE ART INSTITUTE.

THE ARCHITECTURAL EXHIBITS.

THE exhibition of works of art at the Institute this year is a very fine one. A large number of excellent loan pictures, besides new works, are hung. The sculpture exhibits are very good, and are well shown; but the architectural works this year are fewer, numbering only thirty-four: the general excellence, however, is superior to that of former years, and there are only one or two that might be termed commonplace. Messrs. Salmon & Son show a series of photographs of business premises, No. 144, St. Vincent Street, Glasgow, a drawing of which appeared in this journal for December 31st last. The photographs give a very good idea of the building, which differs somewhat from the perspective drawing in its detail. The design, however, in spite of some very original bits of detail, is not altogether a success. It is a steel-framed structure with a stone front, and the stone looks just a little wiry. The same firm also show a dainty pen-and-ink drawing of a billiard-room fireplace for a house in Park Circus, Glasgow, the treatment of which is novel and effective.

Mr. P. Macgregor Chalmers is represented by a perspective of Saint Columba Church, Blackhall, Edinburgh (see THE BUILDERS' JOURNAL for November 26 last). The grouping is very effective and the style, which is Norman, lends itself to a broad and simple treatment. The design of the tower is specially good. The same architect also exhibits a brown-ink drawing of a house at Skelmorlie. The half-timber and the crow-stepped gables and general Scottish feeling in the detail combine to make a very interesting group. A perspective view of St. Michael's Church, Carntyne, by Mr. H. E. Clifford, is a good example of the village church. We do not care so much, however, for his house at Troon (No. 552), although it is shown by a better drawing.

Photographs of Tea Rooms, 137, West Campbell Street, are shown by Mr. W. G. Rowan. The treatment is new, and free in style.

Mr. Alexander Cullen, F.R.I.B.A., shows two perspectives of the Middle Ward Offices, Hamilton—one of the main staircase, the other of the central hall. These works are massive in their style, but there is a lack of individuality and freshness about them.

Mr. John A. Campbell is represented by a perspective of a large new building which is at present being erected at the corner of West George and Hope Streets, Glasgow. The mass and general effect are very good, and the detail so far as the building has been erected is quite equal to the former work of this architect. The general simplicity of this building contrasts well with some of the fussy work, overloaded with thoughtless detail, that has been erected of late years in Glasgow and its neighbourhood. No. 548, photographs of country work, by the same architect, show pleasing details of stabling of a house at Baillieston.

The work of Mr. R. S. Lorimer is always refreshing in its quaintness and originality. His exhibit (No. 564) of photographs of interiors, Great Western Terrace, Glasgow, is quite equal to what one would expect from him. The treatment is Scottish, the detail very thoughtfully considered.

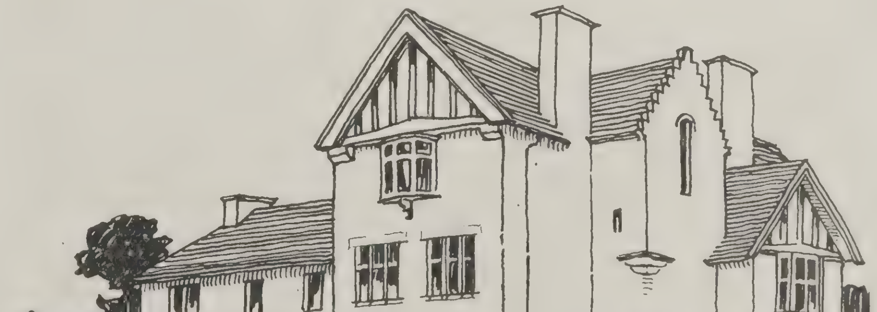
No. 550, a hall interior by Mr. John Ednie, is good of its kind, but its kind is *l'art nouveau.* Messrs. Walker & Ramsay, the two young Glasgow architects who were responsible for the Wolverhampton Exhibition last year, show photographs of this work. It can only be considered as partially successful.

Three interior photographic views (No. 547) are shown by Mr. Alexander N. Paterson, M.A. The rooms shown have coved or barrel-vaulted ceilings, and while these are very successful in one view they are far from it in the view with the oriel, where the cove in its efforts to run round that feature looks ill-considered. Mr. D. Andrew, Junr., is responsible for a good design for a school at Kilbowie; while Mr. Fred Rowantree is represented by two very fine drawings of two York residences, both of which are pleasing in design. Messrs. Niven & Wigglesworth show a fine drawing of the annexe to the Scandinavian Sailors' Home, London, and two photographs of a house at Wimbledon, Surrey, reproductions of which were published on p. 335 of THE BUILDERS' JOURNAL for December 31st last.

A very powerful water-colour of a doorway is shown by Mr. D. Whittet. It is a very successful piece of work, individual and original on the right lines. We do not care so much, however, for his proposed treatment for Hall, No. 566. Mr. James A. Morris, of Ayr, is represented by two frames of photographs of Hinton House, Northamptonshire, both of which are very delightful.

Messrs. Watson & Salmon show two perspectives—one of a Wesleyan Methodist church at Girvan, on somewhat familiar lines, and a design for a district free library, which is good but somewhat heavy in its proportions.

These works are shown on the walls of the grand staircase: surely not the most suitable place for exhibiting the works of the mother of the arts. Of course, the Institute must pay, and in order to do so must have sales. Now, very few of the architectural works—only two in the present show—are for sale. The architectural section, therefore, brings practically no commercial return to the Institute; but, still, as the patron of the arts, this society should surely offer every encouragement to the art from which every other art springs and on which all depend.



ADDITIONS TO HOUSE AT SKELMORLIE. P. MACGREGOR CHALMERS, I.A., ARCHITECT

B

THE ARCHITECTURAL ASSOCIATION.

THE STAINED GLASS OF THE FUTURE.

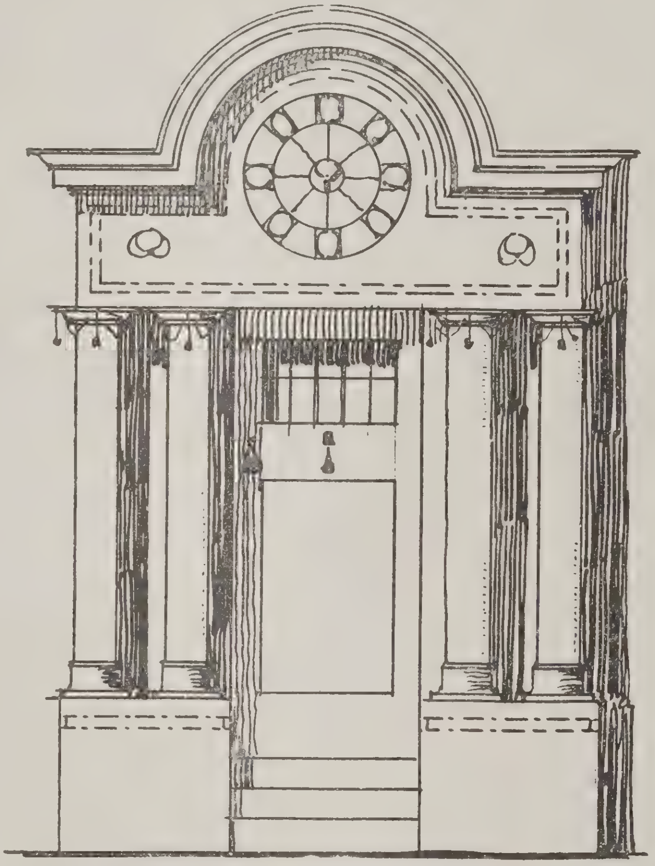
By **SILVESTER SPARROW.**

A MEETING of the Architectural Association was held at 9, Conduit Street, W., on Friday evening last, the chair being occupied by Mr. Henry T. Hare. The following members were elected:—W. Hart Gregson, G. P. Bankart, C. L. Wright and C. F. Cargill. The following additional donations to the New Premises Fund were announced:—Mr. Andrew Oliver, £2 2s. 6d., and Mr. R. H. Weymouth (second donation), £2 2s. A vote of condolence with the family and relatives of the late Mr. Penrose was passed.

Mr. Silvester Sparrow then read his paper on "The Stained Glass of the Future," of which the following is a summary:—

This title has been adopted in imitation of Richard Wagner's "Art-work of the Future." That which was scoffed at as an idle dream and parodied as "The Music of the Future" has become a present actuality. May the omen be propitious!

There is scarcely any subject about which more ignorance prevails than in stained glass. The very title of this address would seem to disclose a certain dissatisfaction with stained glass as it is. It will, therefore, be our first task to find the cause of our dissatisfaction—to diagnose the disease, in fact, before we talk of remedies. Imitation is the disease! And why is imitation the disease? Because it has been said, and repeated on all sides, "There is no glass like the old glass, and there will never be any windows like the old windows." Both these assertions I deny, since they are based on ignorance of the best material procurable to-day, and of the use that might be made of it. The essential qualities of a stained-glass window are that it must look like glass and give tone. I must protest against glass being used as a material for excessive painting. A plea that will doubtless be put forward by the imitators is that if you have to put windows in a thirteenth- or fifteenth-century church you must imitate the glass of those periods. But the very existence of different styles, almost coincident with the centuries, so that we speak of a thirteenth, a fourteenth, or a fifteenth-century style, proves that the old men did not imitate their predecessors. There is another theory, that the old men adapted their glass to the varying styles of architecture. It may be that architects of the fifteenth and sixteenth centuries called for a lighter glass which would show up the more elaborate carvings they indulged in. Those who hold this theory may say that the glass stainer of to-day should adapt his glass to the architectural style of the nineteenth century. But is there a nineteenth century style? Let us leave the question of why the early glass-stainers did this or that, and assume that if they were alive to-day they would have sufficient honesty to use the best material, and sufficient talent to make the best use of it. What, then, is to be our own course with regard to this crucial point? This is the fundamental and unalterable guide for our conduct: One has no right to put bad glass into a window under any pretext whatever. To imitate, one would have to ignore the best glass. The highest qualities of a stained-glass window are Mystery and rich and appropriate colour in harmony with the subject. Do not tell me, therefore, that an imitation fifteenth-century window is appropriate when it lacks mystery and richness of colour. If a window is full of mystery and devotional feeling, a living symbolism, rich and harmonious colour, a simple and dignified design, strengthened by a bold use of the lead, and an expressive tracing and painting, it is worthy to be placed in any church that was ever built. The best material is undoubtedly Prior's Early English glass and Powell's Antique. Early English is a comparatively recent invention, having been in existence only some few years. One would gather from its name that it is an attempt to restore the old English glass; but in my opinion, in the quality of brilliance, in its variety and richness of colour, this far surpasses its original, and I have no hesitation in saying that this is the finest glass that has ever been made for our purpose. There are three sorts of coloured glass used in the stained-glass window—tints, which go under the generic term of "whites"; pot-metals, in which the colour goes right through the sheet; and the flashed glasses—that is, the rubies, some blue, and other varieties. The method of manufacture is somewhat like this. A piece of metal, as the molten glass is called, is taken on the end of a blowpipe, and blown into a square-bottle shape. This contact with the mould gives the glass a certain roughness and inequality, while the inside of the bottle retains a very smooth blown surface. It is this combination which is the characteristic of this kind of glass—brilliance united with body, a faculty of holding the light—while "antique" is more or less transparent. It also varies considerably in thickness, some pieces being quite half an inch thick or more. All this helps its rich and jewel-like quality. The bottles are then cut at the edges of the sides and bottom; which gives us four sides or slabs 6in. by 4in. and one bottom 4in. by 4in. This is the most general size. Other sizes are 7in. by 5in. and 8in. by 6in., the largest. It has been found that this size cannot be exceeded without losing the jewel-like quality of the glass. In flukes or accidents, which are the best things in the manufacture of material for stained-glass, it is particularly rich. When the heavier chemicals sink to the bottom of the pot, the last few bottles that are made from it are streaked and varied in colour in a most wonderful and beautiful way. The colour of these bottles may be quite different from those made from the top of the pot. This quality of unexpectedness is most valuable, and a window largely carried out in this material is unique, absolutely inimitable. It must be said, however, that the scale of colour is not exhaustive, and that some of the colours are very crude (although these have their uses occasionally), so that one has to fall back on Powell's "Antique," by far the best of the so-called "antique" glass. Although Powell's "Antique" is not so fine as "Early English," it has qualities of its own to which, in the present state of the manufacture of "Early English," it may be regarded as complementary: thus I include it in the term "best material." Although it has not the brilliance and body of "Early English" it has those qualities in a much higher degree than other makes of "Antique," which I need not specify. I should mention that there is an imitation of "Early English" called "Norman," which bears a relation to its original similar to that which the common "Antiques" bear to Powell's, and is cheaper. Let me therefore warn you, when you specify Prior's "Early English," to see that "Norman" is not substituted. When I mention that you can get "Norman" for 3½d. per slab, and the lowest price of "Early English" is 6d. per slab, the reason for the substitution is obvious. Broadly speaking, "Early English" has more light, Powell's "Antique" more tone; so that one would use "Early English" for effects of light and brilliant objects and Powell's "Antique" for the parts requiring tone. It is also good to plate a crude piece of "Early English" with, to gain variety of colour and tone. The process of manufacture in Powell's Antique is quite different from the other. It is made in what is called a "muff"—that is, the metal is blown into a cylindrical form (but not into a mould) about 6in. or 7in. in diameter and about 13in. or 14in. high. It is then cut down the height, and placed in a flattening kiln, to come out a flat sheet about 21in. to 23in. long. It is in the process of flattening that the glass loses some of its brilliance. In this manufacture there are also gold pink on Venetian opal, blue on Venetian opal, and gold pink and blue on Venetian opal. The Venetian effect is a ripple or indentation in the glass, which gives it greater brilliance than the flat antique possesses. The opal is the base, and when a thin skim of blue is flashed upon it it produces a varied cool green tint, with streaks of blue. The gold pink is a thin skim of gold flashed on the opal base, the warm tone of the opal softening the sharpness of the pink; the colour produced by the gold. The streaks of blue and gold pink on the opal produce beautiful combinations, often with markings of a feather-like character. This is very good to work away from the gold-pink with. All these are very valuable for special effects. Powell's also make their glass into circles of about 12in. to 14in. diameter. These are much richer than the flat sheets, of which they seem to be a concentrated form. Before leaving the subject of the quality of the material, it will be well to devote a little attention to one colour, the most important in a stained-glass window, namely, ruby. Indeed, it may be called the touchstone of a



DOORPIECE. D. WHITTET, ARCHITECT.

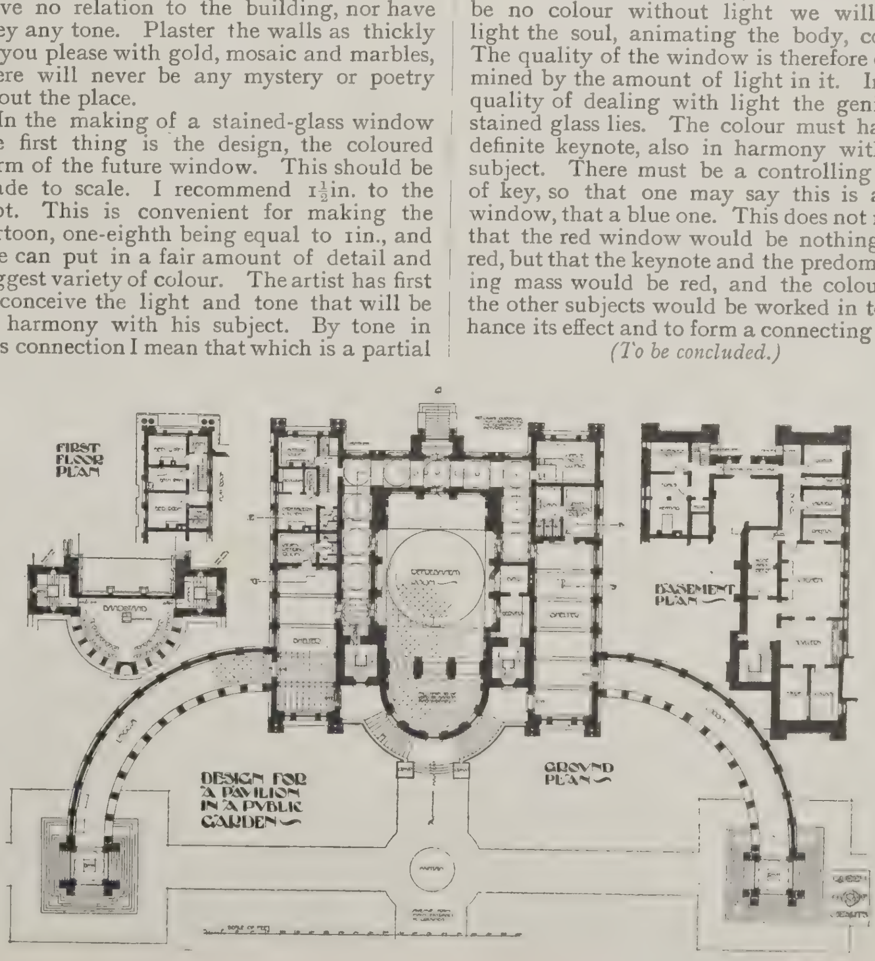
DESIGN SUBMITTED FOR THE R.I.B.A. TITE PRIZE, 1903, BY "QUEEN OF HEARTS."

window, so far as the quality of the material is concerned. There are two metals which produce the red colours we call the rubies: gold and copper. Ruby is one of the flashed glasses: that is, a base of white, amber, green tint, pale blue, or purple is flashed over with a thim skim of either of those metals. Gold ruby is confined almost entirely to "Early English," in which it reaches a price calculated to freeze your young blood and make each particular hair stand on end. You will easily understand that there must be a considerable difference in the cost of these two kinds of ruby; nor will you have much difficulty in guessing which kind is so fondly embraced by the commercial and imitation people. It will be difficult to give you much idea of the enormous difference between the two. Gold ruby is the most distinguished colour, an aristocrat among colours; whereas copper ruby is common and vulgar. Gold ruby is one of the triumphs of Prior's "Early English" glass, in which it provides an infinite variety of rubies, from the richest wine colour to the most delicate and ethereal tints. This variety is partly due to the varying thickness of the gold flash, and partly to the different kinds of base, which also varies in thickness. Spoilt ruby is also another fruitful source of variety, that is, overfired, or when the metal in the pot, decreasing in quantity, becomes too hot. Spoilt in the sense that the maker has missed his aim, but invaluable to those who seek after unique effects. Not that copper ruby is to be entirely ignored. The darkest tones of copper ruby on blue may be used as a subsidiary red, but it can never take the place of gold ruby as the chief mass of red. Powell's brown ruby; a little gold (generally too little gold) mixed with the brown flash, leads to very varied reds, generally of a sombre sort, which may be used in a similar subsidiary sense. Having shown you *which* are the best materials, I must say that architects are extremely lax in the matter of seeing that they get them in stained glass. If it were a matter of drainpipes they would study all the different kinds and specify those of a particular maker; they have a dim sort of idea that if they did not do that, some cheap and inferior quality would be foisted on them. Ah! you will say, but stained-glass is a sacred art; its makers could not do such things: why, therefore, take such precautions? If such be your touching faith, there is nothing more to be said; yet would it not be worth while to enquire where all the rubbishy glass goes to, and why there so little good glass made, that one is absolutely forced to plate a great deal more than one would? To plate is a technical term meaning to lead two or three thicknesses of glass together. I do not see why architects should not specify Prior's "Early English" glass and Powell's "Antique."

Some of you may be under the impression that we put windows in to give light. That is not so with stained-glass: a stained-glass window should be put in to give tone. You may deny this, but I say that, however much you may strive, you will never get mystery or poetry into your buildings otherwise. The Catholic Cathedral at Westminster is a glaring instance. The architect's ideal of stained-glass was a gin bottle. He has tried to get as near to that as possible with roundels and Norman glass, that cheap imitation of Early English. The windows have no relation to the building, nor have they any tone. Plaster the walls as thickly as you please with gold, mosaic and marbles, there will never be any mystery or poetry about the place.

In the making of a stained-glass window the first thing is the design, the coloured germ of the future window. This should be made to scale. I recommend 1½in. to the foot. This is convenient for making the cartoon, one-eighth being equal to 1in., and one can put in a fair amount of detail and suggest variety of colour. The artist has first to conceive the light and tone that will be in harmony with his subject. By tone in this connection I mean that which is a partial deprivation of a particular light, and must not be confounded with light and shade. To give the most familiar instance, moon, light and tone. We see objects that the moon does not shine on cooler in tone than they are in daylight, because the light of the moon is cold. In the same way, whatever light the subject demands, the tone must correspond. Every colour in the window, therefore, must be influenced by either the light or the tone. Colour, which is our next consideration, has hitherto been said to be the chief thing in stained glass. But that is not so; there is a higher aim—mystery, the result of effects of light and tone: the absolutely indispensable quality in a stained-glass window. In a window we are dealing directly with light; there is therefore no need to conventionalize it, and as there can be no colour without light we will call light the soul, animating the body, colour. The quality of the window is therefore determined by the amount of light in it. In this quality of dealing with light the genius of stained glass lies. The colour must have a definite keynote, also in harmony with the subject. There must be a controlling sense of key, so that one may say this is a red window, that a blue one. This does not mean that the red window would be nothing but red, but that the keynote and the predominating mass would be red, and the colours of the other subjects would be worked in to enhance its effect and to form a connecting link.

(To be concluded.)



THE GREAT RUINS OF RHODESIA.

RHODESIA, with a past lost in the mists of antiquity, has never attracted the attention it merits from the archæologists at home, says the Buluwayo correspondent of the "Morning Post." Many people have read Mr. Rider Haggard's "King Solomon's Mines" and "Alan Quatermain," but few have suspected that a substratum of truth underlies the romance of the records. It was vague rumours of mighty stone-built structures and old workings for gold in the interior around which the stories were built. But though the reports were regarded as mere travellers' tales they have proved to be substantially accurate.

"The Khami ruins are easy of access from Buluwayo, being but twelve miles distant, but I was told that I should start at Zimbabwe, where there are the most extensive and striking of the remains of past ages . .

"The Zimbabwe ruins are not picturesquely situated. The great kopje on which many of them are to be found shows precipitous faces of bare rock, which the builders have surmounted with considerable engineering skill. It is crowned by great walls, and huge granite boulders, which are overgrown with trees and bushes of all descriptions, the giant euphorbia attracting attention by its quaint appearance. There is another group of ruins on the ground below . . . On one point all authorities are agreed—that these massive works are not of Kaffir origin; and as it seems indisputable that the Kaffirs have been in the country for quite two thousand years the remarkable buildings must be of an antiquity respecting which the archæologist may well speculate.

"I am informed that the ruins in all parts of this region are much of the same type, consisting of dressed granite blocks placed without mortar in even courses. At Zimbabwe the walls of the great Temple still stand 30ft. high, and in some parts they are 15ft. thick at the base. The building is roughly circular or elliptical in shape, and about 300ft in length. Round the wall to the south are two rows of stone of a carefully executed zig-zag pattern. The three entrances are all towards the north, and are simply gaps in the wall, which is rounded off on both side of the apertures. Inside there is a perfect labyrinth, but the clearing which is now being effected by the Government—otherwise the Chartered Company—is gradually evolving out of the chaos some sort of order. It is to be regretted that a qualified archæologist has not been put in charge of the work. It appears to have been executed with considerable discretion, however . . . The most striking features of the interior of the temple are the great cone and the passage which leads up to it from the most northerly entrance. The passage follows the contour of the outer wall, and is from 2ft. to 3ft. wide, only opening out a few yards from the cone itself, which is at the southern end of the building . . .

"The cone . . . is, like the walls, formed of small dressed blocks of granite. Several explorers have proved it to be solid throughout by making great holes in the sides—a proceeding which seems scarcely to have been justified even for purposes of antiquarian research. It is, of course, the symbol of nature worship as practised by the Phœnicians and other races . . .

"It will be a matter for congratulation when the recently-published ordinance for the preservation of Rhodesian monuments of the past comes into force. The amount of destruction which has taken place since the occupation of the country is declared to be very great, and I am sure that all archæologists cherish the hope of the Rhodesia Scientific Association that the legislative measure will soon become law."

DUSTBIN MORTAR, AND OTHER MATTERS.

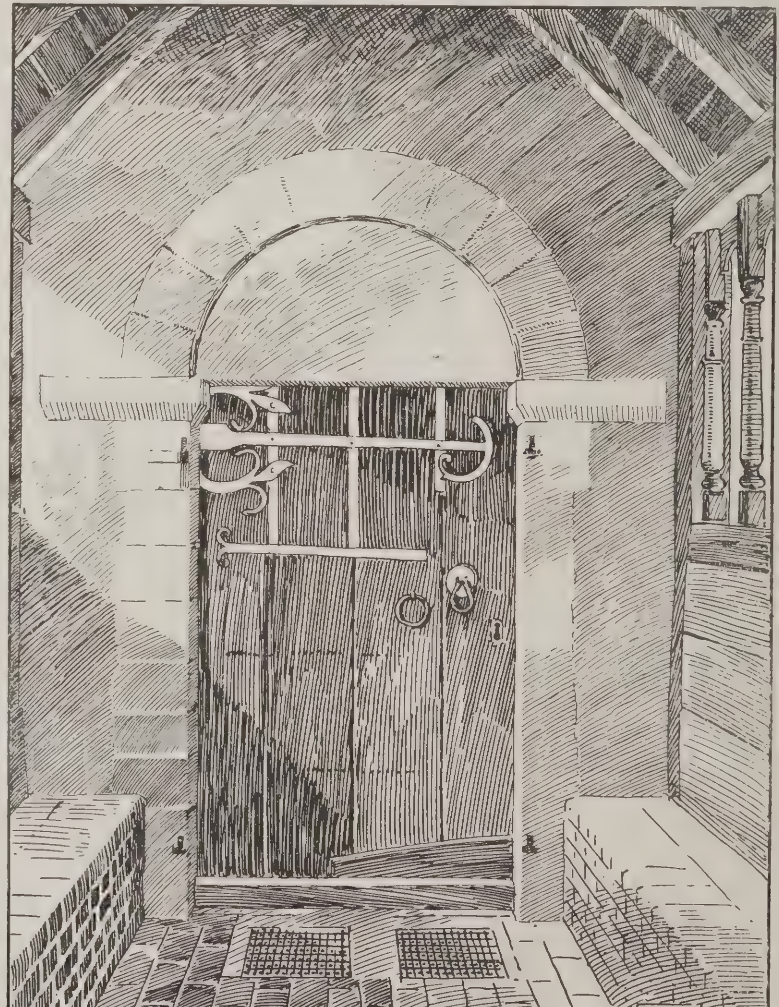
IN the course of his recent presidential address to the Institute of Sanitary Engineers Mr. W. J. Dibdin, F.I.C., F.C.S., referred to the use of dustbin refuse for mortar-making. "From a considerable experience in the examination of building materials," he said, "I am enabled to assert most definitely that such a material as dustbin refuse is the most objectionable which can be employed. I have frequently had samples of mortar used for domestic buildings submitted to me which have been made with decomposing and evil-smelling materials, and which have been covered with a fungoid growth feeding on the organic refuse contained in the mortar.

"The systematic way in which a certain class of builders seek to evade the by-laws as to the use of proper materials is a blot on the industry of the day. High-class builders of standing will, of course, not condescend to such practices, which will only cease when it becomes understood that dishonest work of this nature is as wrong as any other dishonest practice which comes under the criminal law. Sanitary engineers should be thoroughly alive to the quality of the materials employed, and ruthlessly reject any which do not comply with the fundamental principles of their calling.

"Another insanitary practice is the steady neglect in many cases to provide an effective damp-course. In how many cases of new suburban residences do we see the walls in such a damp condition as to render rheumatism and its allied complaints all but a certainty? Given a defective damp-course, a damp soil, and mortar constructed of unsuitable materials, and we have conditions which make for bad health.

"Another point which is still much neglected is the provision of bathrooms in connection with small property. Although it is universally admitted that the greatest factor in a clean bill of health is personal cleanliness, yet large numbers of houses continue to be erected without this elementary safeguard against disease. Even under the best conditions the public bath is but a sorry substitute for the private domestic one. Sanitary engineers should look to this and make it part of their creed that no house worthy of the name should be considered fit for habitation unless it is supplied with a bath, preferably with hot- and cold-water supply. Formerly such a thing was looked upon as a wonderful luxury, like clean sewers, clean roads, clean dustbins, &c., but now we know that it is a real necessity for all really sanitary communities.

"The quantity of sanitary work yet to be done is enormous. 'Society' may take the lead with glass shelves for pantries, and other sound refinements, but that is not enough. Landlords have done and are doing good work in improving the conditions of life, but still much—very much—remains to be done, and that great enemy to health the 'jerry-builder' to be absolutely annihilated. He must be improved off the face of the earth. . . ."



WHITE·RODING·CH: ESSEX·SOUTH·DOOR·

THE L.C.C. BUILDINGS AT MILLBANK.

On Wednesday last their Majesties the King and Queen paid a private visit to what is officially described as the "London County Council's estate of working class dwellings at Millbank, Westminster."

There are at present seventeen blocks of dwellings which have been erected at a cost of more than £200,000. They are practically all of two and three rooms, the total number of persons provided for being 4,430.

After lengthy negotiations as to the site the Council, in November, 1896, approved the plan for laying-out the estate as prepared by their architect. In the following February he was directed to prepare plans of some of the dwellings. With regard to the remainder the Council decided, in view of the important position of the site, to invite from selected architects competitive designs for a specimen block of dwellings from which, if found suitable, other dwellings might be erected. Mr. W. D. Caröe was appointed as assessor, and a sum of £300 was set apart to be divided amongst the competitors in such proportion as the assessor might determine. By adopting this course it was thought that the Council would obtain the benefit of the experience of architects who had given special attention to this class of building, and would moreover have the advantage of the criticisms of its own architect upon such plans.

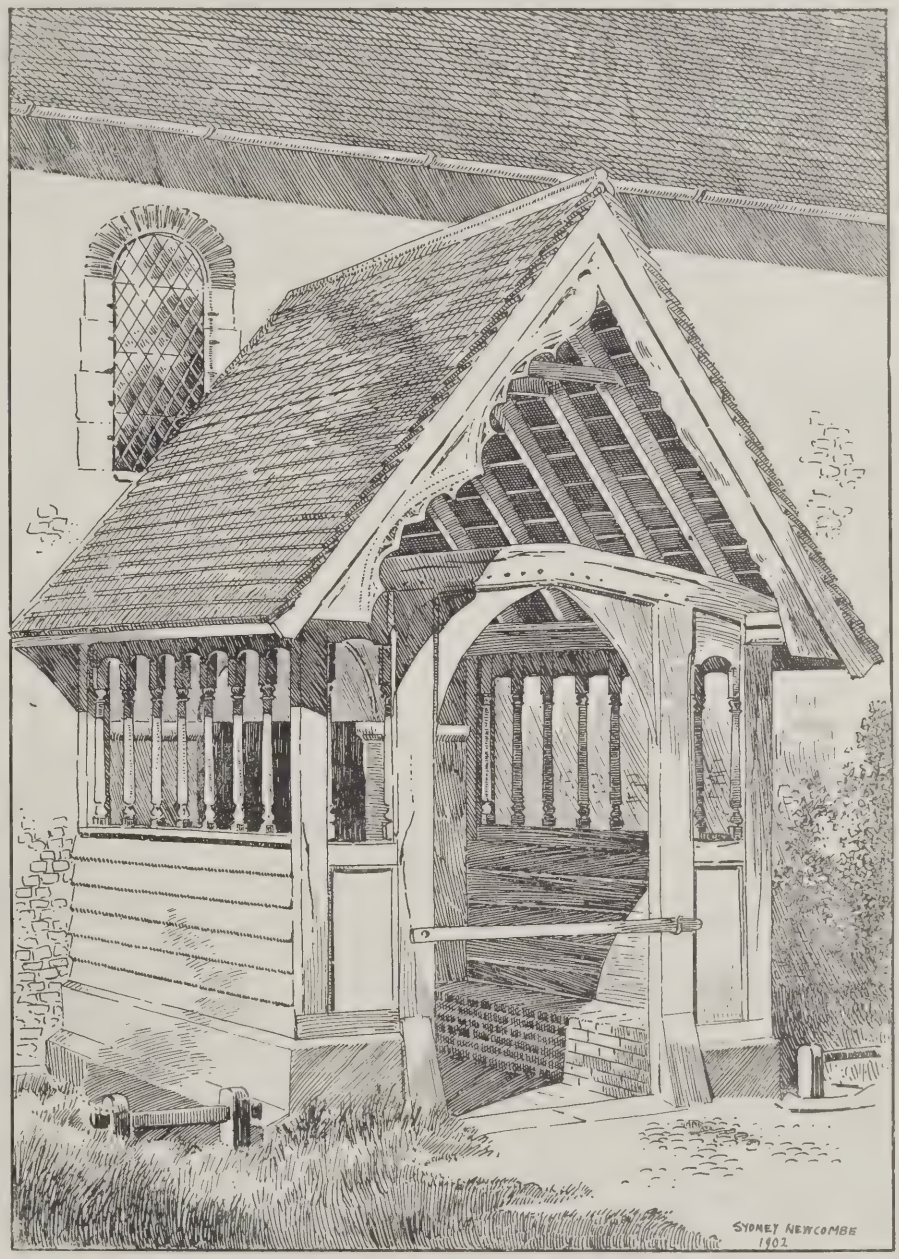
The Council's architect proceeded with his plans, and in due course the execution of the work was begun in December, 1897, and the dwellings completed and occupied in May, 1899. They received the name of Hogarth Buildings, the other blocks on the estate also being named after British artists. Plans for two further blocks of dwellings, named Leighton and Millais buildings, were completed in 1898. As the manager of works did not see his way to undertake the erection of these buildings at the architect's estimate, tenders were invited from selected firms, and in April, 1899, the Council accepted that of Messrs. Holloway Brothers. The buildings were completed in July, 1900. Plans for Romney, Rossetti, Turner and Ruskin buildings were completed in the spring of 1899. They were commenced by Messrs. Holloway Brothers during the following summer and completed by April, 1901.

At the commencement of 1899 Mr. Caröe made his competition award, the first premium of £150 being obtained by Messrs. Spalding & Cross. The Council then considered whether it would be possible to erect a block of dwellings according to Messrs. Spalding & Cross's designs without involving any charge upon the county rate. After much consideration and alteration in the detail of the plans, however, this was not found possible, and the Council's architect was instructed to proceed with the preparation of plans for the remaining ten blocks of dwellings to be erected on the estate; so that the plans of the whole of the buildings, as well as the general design for laying-out the estate, have been prepared by the Council's superintending architect—at first Mr. Thomas Blashill, and later Mr. W. E. Riley, under whose supervision the greater portion of the dwellings have been erected.

The estate lies at the back of the Tate Gallery, and was originally an island enclosed between the divergent branches of the River Tyburn. This stream took its rise on the slopes of Hampstead, and after many windings in an almost uniformly south-eastern direction crossed the site of the present Buckingham Palace. The greater portion of the district enclosed lay below the level of high tide, and in early times must have been a mere morass. To prevent inundation a wall was erected, and was known as Millbank from the fact that the adjoining mill belonging to the Abbey of Westminster was an important feature.

Millbank Penitentiary was erected on the site at the beginning of the nineteenth century.

Competitive designs were invited for the new buildings, the first prize being obtained by William Williams. Mr. Hardwicke was appointed the architect to carry out the designs. The site presented great difficulties: so that the ultimate cost of the prison was £450,130, an increase of £147,715 over the original estimate.



PORCH, WHITE RODING CHURCH, ESSEX.

WHITE RODING CHURCH.

The church of White Roding, Essex, in the country between Ongar and Dunmow, consists of a nave, chancel, porch and west tower. It is of Early Norman foundation; the nave and chancel are of this period. The materials of the early walls are chiefly unwrought flints, with occasional tiles and pieces of stone; the mortar joints are, comparatively, very wide. The idea evidently was to make all the quoins of walls and jambs and arches of doors and windows of ashlar work, but the extraordinary feature is that while the north and south doorways are thus carried out and are quite good examples of the simpler type, the supply of stone appears to have run short when the walls were raised up to about half their height; only the quoins below this level, and the sills and jambs of the windows—in some cases as far up as the springing of the arch, and in others for a couple of feet below—are of worked stone; the remainder, including all the window arches, are finished with bricks. Again, at the time of the building of the tower, which is a finely-proportioned structure of fifteenth-century date, surmounted by a lead spire, the same difficulty appears to have arisen; but with this difference—all the corner quoins, windows, doors and other details are of ashlar, while the walls themselves are an odd mixture of red brickwork-flints of the same nature as in the nave walls, and occasional rubble. The difficulty was overcome this time by projecting all the worked stone slightly beyond the general face of the wall, which was afterwards covered by a thin layer of stucco. This is in great part still left, and one hopes that subsequent restoration will not remove what is a most valuable evidence in this connection, as, speaking generally, there is no doubt that the outer walls in numbers of these early buildings were intended to be so covered, except in parts where wrought stone was used.

NEW LONDON THEATRES.

SEVERAL theatres are projected for erection in London, partly to make up for several that are going or have gone. In the construction of the new Holborn-to-Strand street, Kingsway and Aldwych, two theatres are demolished; the old Opera Comique in the Strand has already been pulled down and the old Gaiety is soon to follow, it only awaiting the completion of its new home, which is now approaching completion, so far as its outward carcase is concerned, from the designs of Mr. R. Norman Shaw, R.A., and Messrs. Ernest Runtz & Co. The theatre is expected to be finished by the beginning of August, and the restaurant in eighteen months' time. Steady progress has been made with the interior of the new theatre. The roof is on over the auditorium and the stage; the ironwork for the dress circle has been completed, and that of the two other tiers is well in hand, while the concrete in the stalls, pit and dress circle is being laid down. The three tiers are, of course, all built on the cantilever principle, and from each there will be two exits—one to the Strand, and the other to Aldwych. The theatre will have eighteen boxes, and is estimated to seat 1,200 persons.

The "Lyceum" is up for auction, and probably when sold will be rebuilt, although it would then have to face the competition of two new theatres that are shortly to be commenced—the one for Mr. E. G. Saunders, the manager and proprietor of the Coronet and Camden Theatres, and the other for Mr. Murray Carson. These two theatres, together with a large hotel, will form one entire block, with a 400ft. frontage, on the opposite corner of the crescent from that on which the new Gaiety Theatre is being erected, and will have collectively 700ft. of frontages in Catherine Street, York Street and Drury Lane. The whole block has been designed by Mr. W. G. R. Sprague, the well-known theatre architect. Mr. Saunders's theatre occupies the finest position at the corner fronting the Strand. This theatre will have a corner tower rising above the main entrance to a height of 126ft. It will be a three-tier house. The whole of the crush-rooms, which will be 20ft. wide by 40ft. long, as well as the staircases and corridors leading to the best parts of the house, will be lined with marble, which will be extensively used throughout the scheme of decoration. Above the crush-rooms there will be a circular balcony, off which will be the principal foyer. The stage itself will be 70ft. wide by 36ft. deep, the height from the footlight level to the grid being 60ft. There will also be a clear auditorium width of 50ft., with a depth of 76ft. from the curtain line to the back wall of the pit. The frontage of the whole pile, consisting of the two theatres, with the hotel in the centre, will be of white Portland stone. The central block will be uniform, and French Renaissance in style. The superficial area of the hotel itself will be 24,000ft., as against 11,000ft. allotted to Mr. Saunders's new theatre, and 12,000ft for the companion playhouse which is to be built for Mr. Murray Carson, and which will have a site equally advantageous to the other—that is to say, there will be thoroughfares on three of the four sides of the building. Though the exterior will be uniform with Mr. Saunders's house, even to the corner tower, surmounted by a dome and figure, the former will nevertheless be a two-tier house, though by some ingenious architectural arrangements that have not been introduced into London theatres before it will have all the effect of a three-tier house. There will be a very fine stage 70ft. wide, with an exceptional depth of 60ft. from the curtain line to the back wall. The auditorium will be 80ft. deep. Building will be begun in about three months' time.

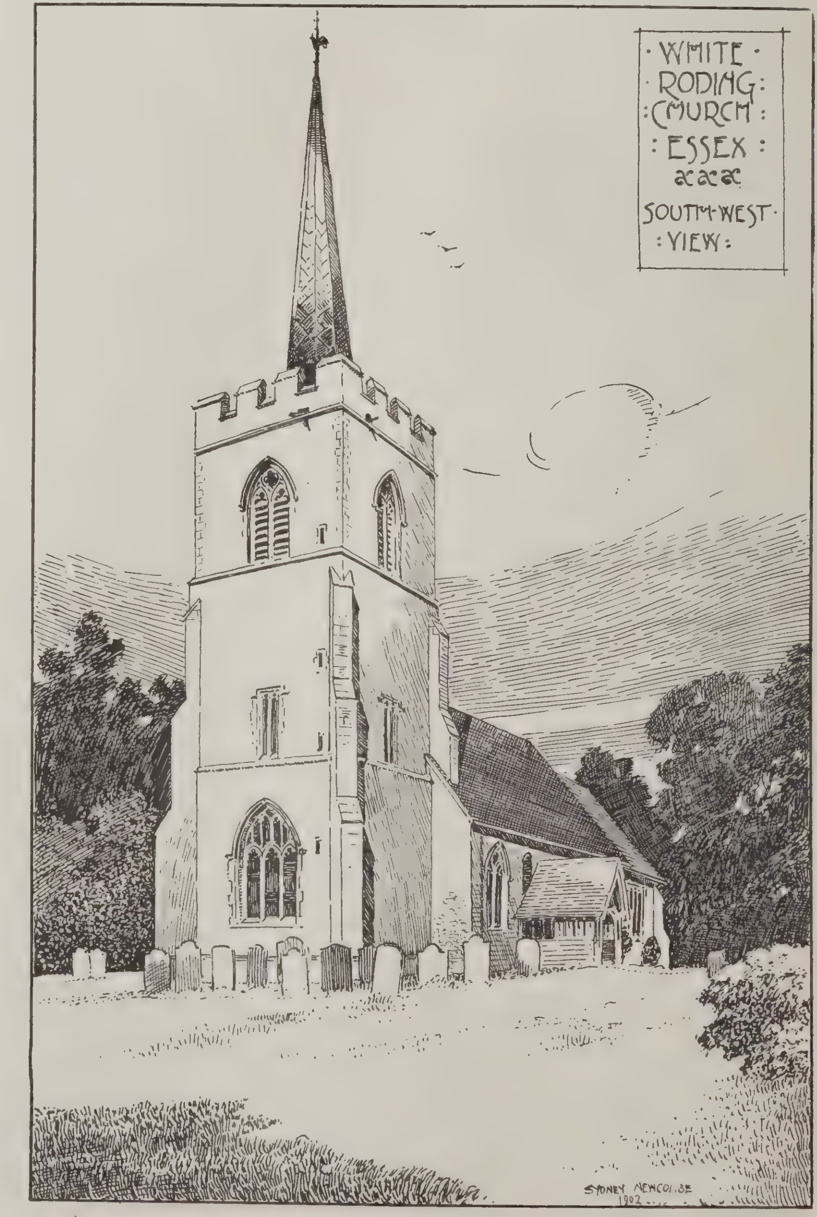
MODERN CHURCHES.

IN the course of a lecture on "Ecclesiastical Architecture" which he recently delivered at Dundee, Mr. Leslie Ower said that before there could be real progress clergy and laity, including architects, must shake off the restraints of mediævalism and archæology, and see that the buildings were the most convenient for the requirements of worship.

The criticism of the beadle of Mains to Dr. Robertson on Glasgow Cathedral—that he was "sair fashed w' thae pillars"—contained the spirit of what he (Mr. Ower) would endeavour to enforce. It was undeniable that pillars were a great "fash" to a modern church, and it was equally undeniable that in these days they were wholly unnecessary. The important part of their church service was the sermon, and it was highly desirable that all the congregation should see and hear the preacher without obstruction. He did not mean to say that no modern church should be built with pillars separating nave and aisles; but where it was so it should be of such a size that the nave only was used for service, leaving the aisles for passages or spaces for grandeur of effect. The best results in church architecture, like most other things, were only to be arrived at by a strong application of common-sense, by studying carefully the essential purposes which the buildings have to fulfil, and designing them in the way most likely to serve those purposes, regardless of precedent or conventionality to begin with. But that did not of necessity mean that their feelings must be hurt by an absolute departure or radical change from everything round which their religious sentiments might cling.

Mr. Ower afterwards discussed the various architectural features and furnishings of a Scotch church. With regard to the Communion table, he said many of them could remember when there was no such thing to be seen in the church except on a Communion Sunday. It had savoured so much of the altar as to be highly objectionable to our forefathers, and it was only now, when the old Reformation spirit was growing weak, and the memory of the trials they endured and the sacrifices they made for Presbyterian forms of worship was passing into the dim and distant part, that the Church was content to tolerate and even to desire such an innovation.

Discussing, in conclusion, what scope should be allowed to the fine arts in connection with religious buildings, he said there might be all degrees of opinion, from the severely simple to the highest elaboration. And probably, as usual, the judicious course was a happy medium which, while yielding to the more enlightened and artistic spirit of our time, was yet able to make a stand against those extremes which would tend to convert religious services into entertainments, and extinguish the spirituality of them in empty ceremonials and observances.



Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

A Tower, and Right of Light.

CARLISLE.—STUDENT writes: "The top of a tower 4ft. sq. being at a greater angle than 45 degs. to the ground-floor window-sills of the houses opposite, could the owners claim 'right of light' and prevent the tower being erected; or what could be the maximum width of the tower? The houses have been built for more than twenty years."

The angle of 45 degs. has nothing to do with the question, in spite of a very general belief to the contrary. If a material loss of light to the old windows can be proved, caused by the projected building to a greater height than previously, then the new building can be stopped by injunction, or damages can be claimed. A solicitor should be consulted at once and very prompt action taken, else it might be held that tacit consent had been given to the obstruction. G. A. T. M.

Oak-Block Floors.

LONDON.—J. H. T. W. writes: "What is the best treatment for English oak wood-block flooring? How should it be cleaned, polished and kept in order, so as to ensure the gradual toning of the wood to the colour which English oak eventually assumes?"

For an oil polish nothing more than pure raw linseed oil is needed, though sometimes 50 per cent. of boiled oil is added. The latter gives a gloss with less "elbow grease"—the principal factor in oil polishing—than does the former. Oak will darken very slowly if the surface is "finished" in any way, hence it would be well to stain the oil with some finely-ground pigment, such as burnt umber. The oil may be applied with a brush and left to sink in; the floor should then be rubbed with cloths until the surface is dry and shines sufficiently. Little after-treatment is necessary beyond an occasional rub to preserve the polish; but after the preliminary treatment with oil, wax polish may be used. It is composed of wax (beeswax is best—tougher) dissolved in turpentine, and is used of the consistency of butter in hot weather. Rub in with a woollen cloth. Polishing is usually done with brushes. H. E.

Heightening a Party Wall.

QUERIST writes: "I have bought a row of cottages, and wish to build at the back of each a scullery with bedroom over. The end house adjoins a similar class of property which already has the same accommodation. The wall between this and my property is a party wall, being 9in. brick between the yards and having half-round brick coping. The adjoining owner objects to the yard wall being heightened as required. Can he legally do this? Can I build a half-brick wall on my own side to the height of present coping, cut out half of the latter, and continue up a 9in. wall from that point?"

You have *prima facie* a right to do as you suggest with the party wall, subject of course to any qualification or modification of your rights which may have arisen by virtue of the Statute of Limitations or otherwise. From your point of view I think the chief danger lies in any rights (which are in the nature of easements) which the Statute of Limitations has sanctioned. I am not able to state from the facts as presented whether or not such easements exist. Several very important factors necessary to arrive at an accurate decision have not been stated. You do not say how you and the adjoining owner hold your houses—whether in fee simple under a lease, or under a sub-lease, and for what term; whether under the same or different owners, and the respective dates of the erection of your house and that of the adjoining owner. Space will not permit me to discuss the possible effect of each of these factors on your position. The law affecting cases similar to yours may be roughly stated as follows:—Where an owner of land permits an adjoining owner to erect a house, building or structure which obscures the light or hinders the access of air to his plot, and where he permits them to remain for a period of twelve years, the Statute of Limitations gives the adjoining owner a right or easement over the land, whereby the owner is prevented from doing anything which would interfere with it. The tenement or holding over which the right is sought to be exercised is called the *servient* tenement, and the tenement which exercises the right is called the *dominant* tenement. If the owner of the dominant tenement and the owner of the servient tenement are one and the same, the statute does not run; neither does it run if the easement was enjoyed by *permission* of the owner of the servient tenement. The question in your case is, Has the "adjoining owner" acquired such an easement against your land? If he has he can prevent you from building; if not, he cannot. From the data above given you should be able to solve the question for yourself. W. JOHNSON ROBERTS.

Metal Tiling.

TEIGNMOUTH.—T. R. writes: "Who is the maker of a patent tile composed of zinc, lead, &c., for fixing on plaster or woodwork?"

The London Tablet Co., Ltd., Sydenham, London, S.E., are the manufacturers of a material known as "Mezotil," which is made to represent glazed tiles. It consists of enamelled sheet zinc, and can be fixed to any surface. T. E. C.

Land Tax.

MANCHESTER.—J. C. writes: "This year for the first time I am charged with a land tax of 1d. in the £ on nine-tenths of the yearly rental of cottage property at 4s. 9d. per week. Is this a new charge by the income-tax authorities on whose form payment is demanded? I may say that the ground is leasehold and subject to a chief rent. Furthermore, my income from all sources does not exceed £400. Am I able to have 50 per cent reduction from the tax imposed, as stated?"

Land tax is by no means new, it having been first imposed as a temporary measure in the reign of William and Mary, and made a permanent charge in 1798. Each parish in the kingdom has to provide its fixed quota of tax, so that if one assessment gets reduced some other or others has to be raised in order to make good the deficiency. Why you have not previously been assessed cannot be determined other than by local enquiry, but the previous sentence may provide a key to the solution of the question. As your income does not exceed £400 you are entitled to an abatement of one-half the amount of the tax; and as the amount you will have to pay is so trifling it would probably be worth while to redeem the tax by payment to the Inland Revenue Commissioners of a sum equal to thirty times the amount charged, and thus end the matter once for all. It is of course not impossible (as an explanation for the previous non-imposition of the tax) that the land tax may have already been redeemed, and its re-imposition therefore a mistake; but if so the deeds would probably show it. This point could be determined on application to the Registrar of Land Tax, Somerset House, London, W.C. W. H. C. E.

Mensuration.

LONDON.—J. R. P. writes: "(1) What is the relation between the angle at the apex of a cone and the angle made by the sector which results from flattening out the surface? (2) How is the radius determined of a semicircle equal in area to a given half-octagon?"

(1) Referring to the illustration below, let d = diameter at base of cone, α = angle at apex, c = circumference of base of cone and length of arc of sector, β = angle of sector, h = slant height of cone, C = circumference of completed circle of sector, π = ratio of circumference to diameter = 3·1416.

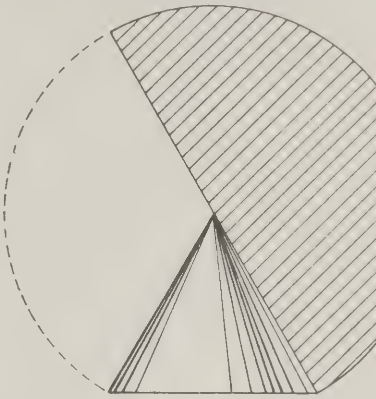


Fig. 1

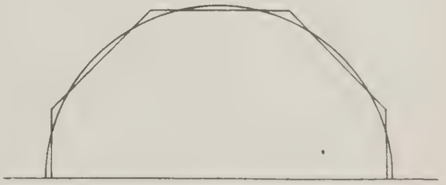


Fig. 2

Then $c = \pi d$, $h = \frac{d}{2} \times \sec. \left(\frac{180 - \alpha}{2}\right)$.

$\mathrm{C} = 2\pi h$, $\beta = 360 \times \frac{c}{\mathrm{C}}$ $\therefore \beta = \frac{360}{\sec. \left(90 - \frac{\alpha}{2}\right)}$.

Example: Angle at apex of cone, 60 degs.; diameter of base, 12in.; then angle of sector

$$= \frac{360}{\sec. \left(90 - \frac{\alpha}{2}\right)} = \frac{360}{\sec. 60} = \frac{360}{2} = 180^\circ,$$

as in Fig. 1. (2) The area of an octagon in sq. in. is 4·8284 times its length of side in inches. The area of a circle in sq. in. is ·7854 times its diameter in inches squared. There will be the same relationship between a half-octagon and semi-circle. Example: A semi-octagon 1in. side has an area of $\frac{4·8284}{2} = 2·4142$ sq. in.; and a semi-circle having an area of 2·4142 sq. in. has a diameter of $\sqrt{\frac{2·4142 \times 2}{·7854}} = \sqrt{6·147} = 2·48$in. as in Fig. 2. HENRY ADAMS.

R.I.B.A. Testimonies of Study.

TODMORDEN.—PROBATIONER writes: "Will you kindly name some buildings about Todmorden suitable to measure for the R.I.B.A. testimonies of study."

SOUTHPORT.—VIGNOLA writes: "Is there an Early English or Decorated doorway in this neighbourhood suitable as a testimony of study for the R.I.B.A. examination?"

So far as I can ascertain there is nothing suitable for the purpose in either of the districts named. Possibly, however, some reader acquainted with the neighbourhood may be able to assist us. Generally speaking, students who reside where there are no good specimens of old work would do well to obtain a few weeks' special leave from their offices during the spring and summer and spend the time in some such place as Lincoln or Ely, first obtaining a special permit to measure portions of the cathedral from the Dean. In one instance within my own knowledge a student measured one of his Orders in the British Museum, where he also did his sheet of Classic Detail; his Gothic sheets were measured at Westminster Abbey, except one window, which was measured at Amiens; his timber roof came from Reims Cathedral, and his other Order from Cologne. The measured sketches for the foreign work were all made during two short visits to the Continent—one at Easter and the other at Whitsuntide—in my company.

G. A. T. M.

Filtering Water from a Village Supply.

STOW-ON-THE-WOLD.—W. E. B writes: "A village with about 100 inhabitants is supplied with water through a 2in. iron pipe Can I get get any kind of a filter to fix in the pipe, or must I build a filter bed in the ordinary way if I decide to make an attempt to purify the water? The pressure is not great, about 30ft. head of water, and the supposed contamination is very slight."

The water may be filtered by means of a filtration apparatus connected to the main. Various systems have been devised, amongst which may be mentioned the Pasteur (Chamberland) filter, manufactured by Messrs. Defries & Sons, Ltd., 147, Houndsditch, London, E.C.; the Hastings polarite filter, manufactured by The International Purification Syndicate, 109, Victoria Street, Westminster, S.W.; Halliday's high-pressure self-cleansing filter, manufactured by Messrs. Halliday & Co., Portland Works, Water Street, Ashley Lane, Manchester. So much depends on the nature and quality of the water supply and, on the various local conditions, that any decision as to the most suitable and economical method of filtration to be adopted—whether by filtration plant or ordinary filter beds—should be a matter of careful consideration. Your best course would be to call in the assistance of an expert engineer, who could make himself intimately acquainted with all the details of the case.

T. E. C.

Rating of Builder's Plant.

HEXHAM.—A. Y. T. writes: "What part of a builder's plant is ratable? I have been in business for a long time and have never been rated until now. Can machinery, mortar mills, and mason sheds on a new building in progress be rated, or the land outside the building on which stock is lying that will be needed in the new building? Assuming that they can, there will also be income tax to pay on the assessment, and no credit has been allowed in the accounts for these charges as business charges, as no rent was paid, yet in the new assessment they will be treated as a source of income."

Personal property being exempt from poor rates, no part of a builder's plant is ratable, but, reading between the lines of the query, the facts would seem to be that a certain portion of land has been lying idle and untenanted, and has therefore been exempt from the burden of rates. Building has now commenced, sheds have been erected and machinery fixed, and a portion of the ground has practically been converted into a builder's yard. As such it is clearly liable for rates. And it has been decided by the courts that machinery attached to a building or to land is liable to be rated; and, as an extreme case, it has been held that a billiard table, if let with the house in which it stands, is liable to be assessed. Assessments are usually made up to the hilt; and if in the present case the amount is thought excessive an appeal for its reduction can be lodged. Yes, there will also be income tax to pay "in respect of the property in lands, tenements, &c. and on the annual value thereof." The fact that nothing has been allowed for in respect to these charges will avail nothing probably, though an appeal may be tried. In the case of a single house, or a pair being erected no charge would, most likely, have been made; but as it would seem that the development of an estate is in progress, and that the sheds and machinery are likely to remain for some time, there seems little ground for claiming exemption from payment of rates and little prospect of such a claim being allowed.

W. H. C. E.

Lime Kilns.

BATH.—J. L. write: "Will you kindly give a list of the chief points to be observed in erecting limekilns, or state where we can obtain information concerning lime-burning and see the most modern process."

In the space of this reply it would be impossible to give particulars of the various forms of kilns and their respective merits for different objects. If our correspondents will consult "Specification, No. 4," 1899 (10s. nett), they will find an article on "Lime Kilns: Their Design and Construction," by Charles T. Ruthen, C.E., illustrated by plans and sections. In "Specification, No. 5" (5s. nett), Mr. Ruthen contributes a further article on "Lime Kilns: Their Working and Management," with illustrations of time- and labour-saving devices used on modern lime-burning works. "Specification" (Nos. 4 and 5) can be obtained from our Publisher at 6, Great New Street, E.C. These articles deal with the constructional and equipment sides of the work. There is a treatise on "Limes, Hydraulic Cements and Mortars," by Q. A. Gillmore (U.S.A.), published by E. & F. N. Spon, 125, Strand, W.C., at 18s. One of the chief points Mr. Ruthen calls attention to is the question of the site: "The position selected for the erection of a limekiln has a great deal to do with the satisfactory working, after erection, both as regards the quality of lime turned out from the kiln and the economy in working the same. It is preferable, where possible, to build kilns on the face of a steep bank, with an inclined roadway leading to the top or, better still, in such a position where there is a railway siding at the top level. The coal and stone can then be carted or brought in by rail, as the case may be, to the top and from thence into the kiln, the calcined lime being withdrawn at the bottom. A position such as the one mentioned will save the great expense of lifting the limestones and coal to the top of the kiln."

Party-Walls.

ENQUIRER writes: "Two party walls divide adjoining owners A and B. A's wall was built first. B wants to buy the use of A's wall. This is declined. A put up his own wall, but did not carry it above his roof, so that another person would not know there were two walls; the slates of B's roof coming flush with A's wall, and thus letting all rain run on to A's wall. Moreover, by stopping his wall B has made use of A's coping slates, which protect A's wall-top from rain. (1) Can A make B carry his wall up beyond the roof-line? (2) Can A restrain B from using any part of his premises for B's advantage? (3) Can A claim any damage?"

(1) A cannot compel B to carry his wall above the roof-line, as such matters are dealt with under the local by-laws. The by-laws of some local authorities require that party-walls shall be carried above the roof, whilst others simply require that the party-wall shall be carried up as high on the underside of the slate or other covering. (2) Yes, as a general principle, but in the metropolis (under the London Building Act, 1894, 57 & 58 Vict., c. 213) the adjoining owner possesses certain rights to build the footings of an external wall upon the land of the adjoining owner under certain conditions. (3) Yes, if A can prove that he has sustained any material injury which has been directly caused by B; but in this particular case it would appear to be very doubtful.

T. E. C.

Technical Weeklies.

EDINBURGH.—P. J. B. writes: "What are the addresses of the 'Contract Journal,' the 'Surveyor,' and the 'Municipal Journal'?"

The "Contract Journal" is published at 139 and 140, Salisbury Court, Fleet Street, E.C., every Wednesday, price 6d. The "Surveyor" is published at 24, Bride Lane, E.C., every Friday, price 3d. The "Municipal Journal" is published at 12, Salisbury Square, E.C., every Friday, price 1d.

Defective Hot-water System.

G. F. writes: "Is the arrangement shown by the accompanying sketch (not reproduced) an efficient one for hot-water supply? It was put in about six years ago, and was quite satisfactory until six months ago, since when no hot water has been obtainable. The boiler has been taken out and found to be in order. The water-supply was short and the cistern was found empty: the range was then put out of use for a day or two, and there has been no hot water since."

The arrangement of pipes appears to be similar to what is usual with a cylinder system having no secondary circulation. The fact that the system gave satisfaction for over five years would indicate that the arrangement of pipes is all right. The trouble would appear to be in the fire. Ascertain whether the flue is clear and drawing properly. If it is, and there is water in the boiler and a fire in the grate, the water will get hot. As the pipes between the boiler and cylinder are clear, the water is bound to circulate as it becomes hot, otherwise the water will boil and the steam formed will condense in either the flow or return pipe, causing water-hammer. As no mention is made of noises I presume there are none. The trouble, therefore, is in the fire or flue.

G. A. A.

THE LONDON ARCHITECTURAL VIGILANCE COMMITTEE.

WITH this title a committee is proposed to be formed "to promote as far as possible a more dignified and rational appearance to metropolitan schemes relating to bridges and edifices."

The objects of the committee would be—(1) To endeavour to act by influencing public opinion, and if necessary to protest against the action of public authorities in refusing to consider qualified advice on the æsthetic as well as sensible treatment of public works of art. (2) To constitute a body which should be able and willing to give competent advice to public bodies when occasion arises, and to place its judgment and advice at their disposal. With these ideas in view, it is proposed that the committee shall consist only of such persons as, from their artistic position or experienced judgment, are entitled to offer advice or to undertake criticism.

At present the committee is proposed to consist of Lord Windsor (chairman), Lord Balcarres, Sir John Stirling-Maxwell, Sir E. J. Poynter, Sir W. B. Richmond, T. Brock, G. J. Frampton, Aston Webb, John Belcher, Sir Benjamin Baker, Sir Thomas Wrightson, Professor Pite, W. D. Caröe, H. T. Hare, Dr. Longstaff, M. H. Spielmann, and H. Heathcote Statham.

Correspondence.

"Recent Work in Oxford."

To the Editor of The Builders' Journal.

XFORD.

Sir,—The writer of the article on the bove subject in your issue for last week tates that street improvements are to be ade by widening Carfax, Oxford, and that esigns for the buildings were prepared by Ir. Hare. We beg to state that we are the rchitects for this work; and also of Lloyds ank.—Yours truly,

R. C. DAVY, M.S.A.
STEPHEN SALTER, F.R.I.B.A.

Old Brass Lecterns.

To the Editor of The Builders' Journal.

XETER.

Sir,—The old brass lectern in Southwell inster originally belonged to Newstead bbey. At the time of the dissolution of e monasteries (in 1535 or 1536) the monks, aving first hid their royal charter and her parchments in the ball upon which the rd is perched, threw it into the adjacent ke. There it remained until accidentally shed out in the middle of the eighteenth ntury. At the sale of the fifth Lord Byron's ffects at Newstead it was purchased by a atchmaker of Nottingham, and it was the azier who repaired it for him who found the bbey grants, &c., concealed within. The tradesman sold it in 1805 to Sir R. Kaye, Prebendary of Southwell and Dean of Lincoln, who presented it to the Minster. It bears the inscription "Orate pro anima Radulphi Savage, et proanimabus omnium fidelium de functorium."

At Queen's College, Oxford, the eagle lectern turns on a pivot, and its globe is inscribed "Aquila Regina Avium Reginensium."—Yours truly, HARRY HEMS.

Lead on Oak.

To the Editor of The Builders' Journal.

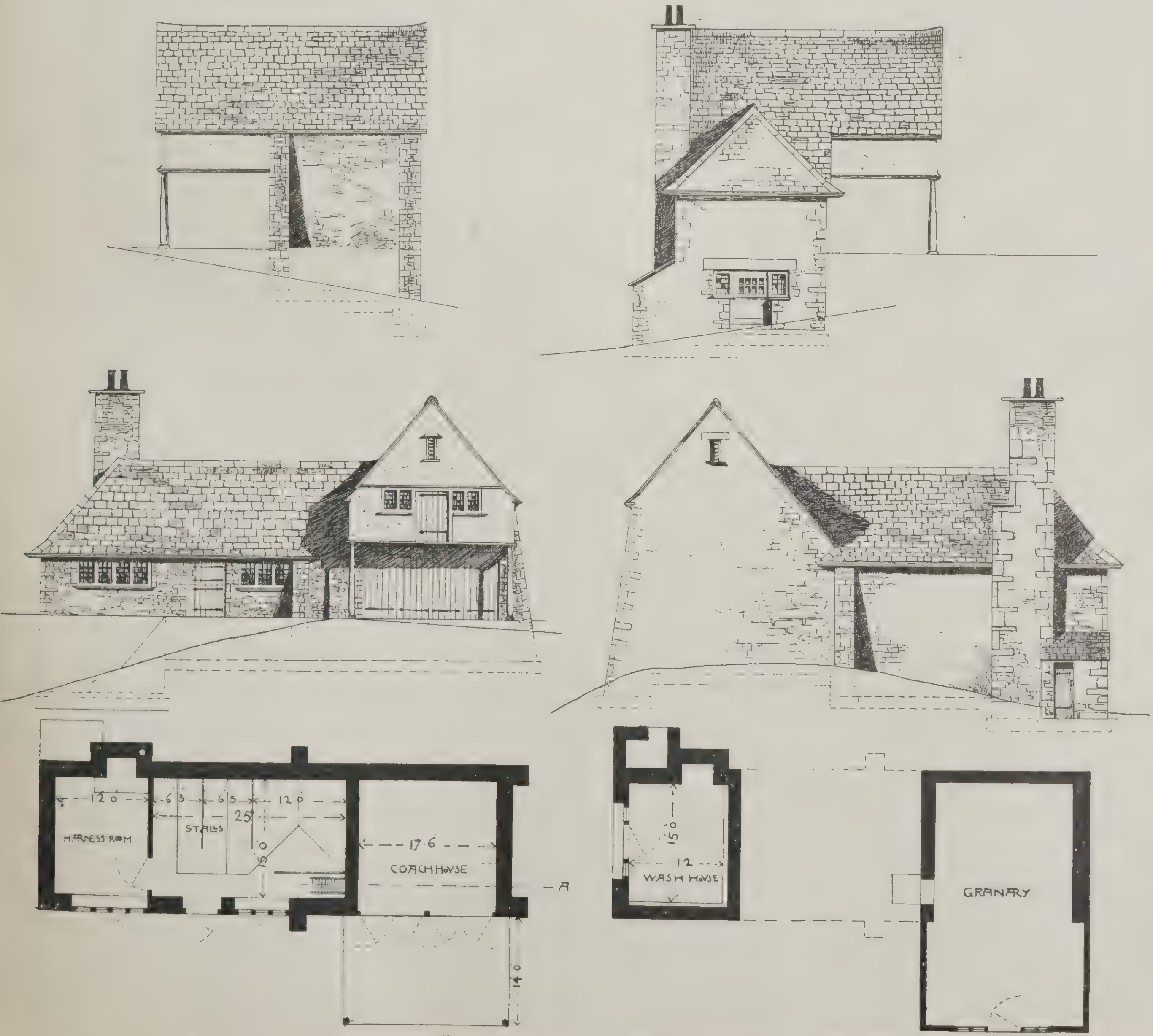
London.

Sir,—Referring to the enquiry on p. 8 of your issue for last week, I do not know from actual experience of the result as stated by Beckett (now Lord Grimthorpe) in his book on Building; but I do know that almost the last trace of silver is now taken out of lead by the desilvering process. The old native lead which was *cast* into sheets to cover our cathedral roofs contained a notable quantity of silver. Beckett says that this protected the leadwork from the corroding action of the acids of the oak; but the modern milled and desilvered lead should never be laid on oak, as the protective silver being taken out it will soon decay, and it is recommended that if milled lead be used it should be laid on deal boarding, unless, indeed, virgin lead be used with the silver remaining in it, and *cast* into sheets. Felt interposed would probably be equally injurious to the lead as it is to zinc. Care should be taken that zinc is not laid under an uncovered copper electric wire, else a galvanic action may be set up, which at times has been a source of mysterious decay.—Yours truly,

ARTHUR HARSTON, F.S.I.

The Proposed Stable at "Broadleys," Windermere, is for Mr. A. Currer Briggs, and is to be built in local stone, with local green slates for the roof in graduating courses to very large at the eaves. The only rough-cast portion is the wood construction of granary over the washing space.

Manchester Society of Architects.—At the meeting held on February 12th Mr. E. Percy Hinde, A.R.I.B.A., read a paper on "Some Elementary School Buildings." The chair was taken by Mr. J. D. Mould, in the absence of the president. The lecturer pointed out the principles that effected school planning, and showed how the new code largely modified former conditions. Plans of school buildings of various types were hung on the walls to illustrate the lecture. The subject for the Society's last monthly competition for students was a sundial. The prize was awarded to Mr. C. H. Potter, and a special prize to Mr. F. Osler. Messrs. A. Maclaren, Frank Dyer, R. J. Vernon, Q. M. Bluhm and Norman Taylor received honourable mention.



PROPOSED STABLE BUILDING, "BROADLEYS," WINDERMERE. C. F. A. VOYSEY, ARCHITECT.

Keystones.

The Lytton Memorial Tablet in St. Paul's Cathedral, which has just been unveiled, was designed by Mr. Alfred Gilbert, R.A.

The Scenes of "A Clean Slate," the new comedy at the Criterion Theatre, have been furnished by Messrs. Oetzmann, of Hampstead Road. They have also re-upholstered the stalls of the theatre.

The Temple Church.—In addition to the restoration of the belfry tower at the Temple Church, it is understood that the Temple authorities have decided that the ancient Norman porch and entrance arch of the church shall be carefully renovated and restored.

A new Lighthouse is being erected at a cost of about £30,000 on Dungeness Point, which by the accumulation of shingle is said to have extended nearly half a mile within living memory. The present lighthouse was built, after the model of the Eddystone, towards the end of the eighteenth century.

Cottages at 2s. a Week Rental.—Alderman Wakerley, of Leicester, has erected cottages on his estate at Gedding, near Bury St. Edmunds, which are let at a weekly rental of 2s., which give a return of 3½ per cent. on the capital invested, and he is about to publish the drawings and all particulars as to cost, &c. The cottages have two living-rooms and a scullery, and three good bedrooms.

Sonning Bridges.—At the last meeting of the Oxfordshire County Council the Roads and Bridges Committee reported that under the power delegated by the Council to the committee to settle finally the design and method of re-building these bridges the committee decided to carry out the original plans of the architect for providing bridges with lattice girder parapets supported on iron piles with spans of 50ft. width, according to the accepted tenders for £7,671 9s. 6d., in preference to the alternate plans for substituting heavy flat main girders, using the old iron railings as parapets, and building brick piers as supports with spans of 33ft., which involved a cost of £8,654. The work of reconstruction has advanced and the architect has given his certificate that £1,000 is due on account of the builders' work. The report of the committee was adopted.

Glasgow Technical College.—At a meeting of the Glasgow and West of Scotland Technical College Architectural Craftsmen's Society held on Friday last a paper was read by Mr. James Benson on "Leaded and Stained Glass Work." He traced the history of stained-glass work in the early ages, and the decline of the art on the introduction of oil paint, by the expounders of fine art finding in it a better medium for the expression of their ideas and emotions. In comparing the various kinds of glass used Mr. Benson stated that the best glass of British manufacture was much superior to that made on the Continent, and that it was now possible to obtain stained glass equal in tone and permanency to the fine work of the ancients. In conclusion the lecturer gave a description in detail of the process of design and construction of a memorial window. A vote of thanks was accorded the lecturer. On Saturday, February 21st, the members of this Society visited the new Elmvale School now in course of erection to meet the increasing need of school accommodation in the Springburn district. The school is from the design of Mr. H. E. Clifford, I.A., Glasgow. Owing to the inclement weather the attendance was small. The visit proved of a highly interesting and instructive nature. Several novel features of school construction were pointed out by Mr. Dale, Mr. Clifford's representative, and by Mr. Aitken, clerk of works.

Mr. J. J. Burnet, F.R.I.B.A., A.R.S.A., has been elected a corresponding member of the American Institute of Architects.

Mr. John Taylor, A.R.I.B.A., of Longton and Leek, has been appointed architect for the new electric-light station to be erected for the Leek Urban District Council.

Mr. A. Hunter Crawford, president of the Edinburgh Architectural Association, has been specially elected an F.R.I.B.A. by the Council.

The new Bridge over the Thames at Kew, which has been in course of construction for over three years, is now nearing completion, and it is announced that his Majesty the King, accompanied by Queen Alexandra, has consented to open it on some date subsequent to May 1st.

A Yorkshire Architect's Affairs.—At the London Bankruptcy Court last Thursday, J. Holmes Greaves, architect, late of Leeds and Pontefract, attended for public examination upon accounts showing liabilities £1,255 and assets valued at sufficient to provide a surplus of £604. The debtor lodged a proposal under which the creditors will be satisfied in full, and a further meeting of the creditors will be held this week to consider the offer.

Architectural Association of Ireland.—The sixth technical demonstration of this Association was held on Thursday, February 19th, at the iron foundry of Messrs. Tonge & Taggart, Windmill Lane, Dublin. There was a fair attendance of members, who were conducted around the premises by Mr. Tonge. Pattern-making was first seen in operation and afterwards the various processes involved in making moulds were executed and minutely explained. The members finally proceeded to the furnaces and witnessed the casting of various ironwork details.

The Cartwright Memorial Hall. — The Markets and Fairs Committee of the Bradford Corporation last week considered the plans for the laying-out of the grounds surrounding the Cartwright Memorial Hall, prepared by Mr. J. W. Simpson, F.R.I.B.A., of London. The plans provide for an imposing terrace on the Manningham Lane side of the hall, for the laying out of the grounds, and for handsome balustrades and ornamental gates. The plans were approved generally, and instructions were given for tenders to be obtained for carrying out the work.

Hereford Cathedral.—The Dean of Hereford, D.D., F.S.A., in lecturing on "The Evolution of Architecture in Hereford Cathedral," said that the Cathedral in itself furnished a complete series of designs in every form and variety. There were the Norman, Early and Late Transitional, Lancet Early English, Lancet Decorated English, Florid or Perpendicular, down to the sixteenth-century Booth porch, which was a beautiful example of Late Perpendicular. It would be well to endeavour to explain the reason for the great diversity of style not only in their cathedral but in other cathedrals. It must be, therefore, understood that as a general rule the builders of the Middle Ages never fell back upon a past era of their art; their sole aim seemed to have been advancement. With regard to the present condition of the building, he said that £100,000 could be well spent on it to advantage.

TO CONTRIBUTORS.

THE EDITOR will be pleased to consider any articles, illustrated or otherwise, dealing with old and new buildings, methods of construction, or other matter of an architectural character. He will also be glad to consider architectural photographs and sketches (the latter preferably in black and white) and measured drawings of work in this country or abroad. News items of interest to architects and builders will also be considered, provided the name and address of the sender are given; no notice will be taken of anonymous contributions. All communications should be addressed to the Editor of the BUILDERS' JOURNAL, 9, East Harding Street, E.C.

Builders' Notes.

The Cottage Hospital, Caterham, is being warmed and ventilated by Shorland's patent Manchester stoves with descending smoke flues, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

The Town Hall, Dumfries, is being fitted with "small tube" hot-water heating apparatus by Messrs. John King, Ltd., engineers, of Liverpool. The ventilation of the building has also been placed with the same firm, employing their patent tubular exhaust ventilators, which are guaranteed to be absolutely weatherproof.

Messrs. Mellowes & Co., of Sheffield, and 28, Victoria Street, London, have received the order for covering with their patent "Eclipse" glazing the roofs over new station at Wemyss Bay, on the Caledonian Railway; new sheds for machinery at Bolton, for the London and North-Western Railway; and extensions to Messrs. Swan & Hunter's shipbuilding yard at Wallsend, Newcastle-on-Tyne.

London County Council.—At last week's meeting of the Council the Finance Committee stated that the total nett debt of London outstanding was £54,257,005, an increase of 8·71 per cent. on the year. The Housing of the Working Classes Committee reported: "That the estimate of £7,500 submitted by the Finance Committee be approved, and that the freehold of the site in Brixton Hill, near the Avenue, be acquired by the Council under Part III. of the Housing of the Working Classes Act, 1890." This was agreed to.

Partnerships Dissolved.—The partnership subsisting between William James Davis, Ellen Maria Davis, Robert Edward Davis, George Frederick Davis, Herbert Morgan Davis and Frank Davis, carrying on business as bricklayers and builders, at Walsall Street, West Bromwich, under the style or firm of "John Davis & Sons, "has been dissolved from February 13th, 1903. All debts due and owing by the said late firm will be received and paid by the said Herbert Morgan Davis.—The partnership subsisting between Charles Adams Daw and William Adams Daw, carrying on business as builders, at No. 27, Palace Gate, Kensington, under the style or firm of C. A. Daw & Son, was dissolved from April 18th, 1894. All debts due to and owing by the said late firm will be received and paid by the said William Adams Daw, by whom the business has been carried on since the date or dissolution under the style and firm of C. A. Daw & Son.

The International Fire Prevention Congress is to be opened at Earl's Court on July 7th with a general meeting, followed by sectional meetings on July 8th and 9th. Several of the great Government departments, such as the Local Government Board, H.M. Office of Works and the Board of Education, have notified their intention of being represented by delegates, as have also some thirty municipalities, including cities like Edinburgh, Birmingham, &c. Further, the Metropolitan Asylums Board, several similar institutions, some of the City Companies (such as the Joiners' Company, the Tylers' and Bricklayers' Company), and quite a number of the principal technical and scientific societies, have decided to send delegates. Nearly all the great American and Continental organizations interested in the subject have already decided to send deputations. The Congress offices will be at 1, Waterloo Place, London, S.W., where particulars can be obtained from the hon. secretary. Those desiring to participate in the discussions or present papers should make their applications before the end of March.

Labour in January.—The Labour Department of the Board of Trade report that the general state of employment during January showed little change as compared with

December. It was worse than a year ago, particularly in shipbuilding and the iron and steel industry. In the 225 trade unions, with an aggregate membership of 547,671, making returns, 27,685 (or 5·1 per cent.) were reported as unemployed at the end of January, as compared with 5·5 per cent. in December. In the engineering trades the general state of employment continued quiet in January, and was rather worse than a year ago. In the building trades employment is very dull, and on the whole shows little change as compared with the previous month, but is worse than a year ago. The percentage of unemployed union members among carpenters and joiners was 6·5 at the end of January, compared with 5·9 in December and 5·6 in January, 1902. The percentage for plumbers was 6·4 at the end of January, compared with 5·6 in December and 5·8 in January, 1902. The total number of workpeople involved in disputes which began or were in progress during January, 1903, was 14,921, compared with 15,830 in December, 1902, and 26,045 in January, 1902. No new disputes of importance began in January. The seventeen that occurred involved only 2,332 workpeople, of whom 1,916 were directly and 416 indirectly affected. Of the seventeen new disputes in January, 1903, two took place in the building trades and five in the metal, engineering and shipbuilding trades. Definite results were reported during the month in the case of twenty-five disputes, new and old, affecting 4,843 workpeople. Of these twenty-five disputes, six, involving 285 persons, were decided in favour of the workpeople; thirteen, involving 2,118 persons, in favour of the employers; and six, involving 2,440 persons, were compromised. The changes in rates of wages reported during January affected about 23,400 workpeople, of whom nearly 16,300 received advances and 7,100 sustained decreases. The nett effect of all the changes was a decrease averaging 1½d. weekly per head of those affected. One of the principal advances was to 1,500 limestone quarrymen in Weardale.

Obituary.

Mr. Alfred Purkess, architect and borough surveyor of Andover for many years, died last Saturday week.

Mr. Griffith Davies, one of the partners of the well known firm of Davies Brothers, builders' merchants, of Newport, died last week at the age of fifty-six years.

Mr. William Harrison, builder and contractor, of Lancaster, who was first president of the Lancaster Master-Builders' Association, died last week in his fifty-third year.

Mr. C. Hankin, builder, &c., of Downshire Hill, N.W., an old and much-respected inhabitant of Hampstead, died recently at the age of sixty-six years.

Mr. Robert Sheach died recently at Newport, Fifeshire, in the ninety-fifth year of his age. In his native place of Ceres he started as a mason, and while young went to Dundee, where he set up as a builder, retiring about eighteen years ago. Mr. Sheach leaves two daughters and two sons, one of the latter being Mr. Robert Sheach, builder, of Dundee.

Mr. William Darlington, a well-known builder of Hexham, died last Sunday week at about seventy-four years of age. He was for many years in the building trade in partnership with his brother, Mr. Joseph Darlington, who died in 1898. The Messrs. Darlington built a number of gentlemen's mansions and other public buildings, the latter including Prudhoe church and manse and Lambton's bank at Hexham, as well as carrying out restorations at Langley Castle and Haughton Castle.

Law Cases.

Builders' Perquisites.—Before Judge Gye at Alton County Court last week Miss Emily Rose Morris, of Bentworth, sued Messrs. W. J. Drowley & Co., of Woking, for the return of a pump or its value, £4 10s., and 10s. damages. The defendants put in a counterclaim for £3 for materials retained by plaintiff. It appeared that the defendants had carried out certain alterations to a house for the plaintiff, and in accordance with what they alleged to be a well-known custom a pump was taken away and sold. Evidence was called to show that unless a special clause was inserted in the contract a builder was entitled to anything which might be taken out of a house in the course of alterations, no matter what the value of the material might be. His Honour, in giving judgment for plaintiff on the claim and counterclaim, said that no conclusive evidence had been put in to show the existence of this supposed custom, while if it did exist it was a most unjustifiable one. He refused to grant leave to appeal.

Cement: False Weights in Bags.—At Greenwich Police Court last week James Gladstone, builders' merchant, was summoned by the secretary of the London Lime, Cement, Brick and Slate Merchants' Trades Protection Association for unlawfully using false measures or sacks, and for selling cement to which a false trade description as to its weight was applied. Charles Long said he was employed on December 20th by Messrs. Eastwood & Co. to go to the defendant's premises at Catford for a ton of cement. He saw defendant and asked for a ton of cement, and received eleven sacks and an invoice for a ton. He took the sacks to Messrs. Eastwood's Well Hall depot. William Saunders, foreman at this depot, deposed to receiving the sacks, which he at once sealed and afterwards sent to Greenwich. Ernest Scragg, foreman at Messrs. Eastwood's Phœnix wharf, Greenwich, said he weighed the bags, which in the total were 163lbs. short. Sydney James Bolt, another carman, proved a further purchase, which Mr. Scragg said was 172lbs. short. Albert Letchford gave evidence of a third purchase, which was said to be 205lbs. short. Harry Le Marchant, managing director of Messrs Martin, Earle & Co., wholesale cement merchants, deposed that his firm supplied the defendant with cement. In the ordinary course eleven sacks to the ton would be supplied, but at the defendant's request he was supplied with twelve sacks to the ton. In cross-examination, witness admitted that many of the defendant's orders were eleven sacks to the ton, and he produced only three orders where twelve sacks were specified. Harold Anderson, director of the Associated Portland Cement Manufacturers, also deposed to the sale of cement to the defendant in ton lots contained in twelve sacks. For the defence Mr. Davies said his client's instructions to his foreman were to supply the correct quantity, and if there was any deficiency to make it up. The defendant said he purchased the twelve sacks to the ton for the convenience of small dealers. His special instructions to his foreman were that if there were no eleven-to-the-ton bags, and anyone wanted a ton, he was to break a bag and distribute it among the eleven, so as to make up the weight. His manager informed him that he had sold eleven sacks to the ton (this being the third purchase), and witness told him to go off at once and rectify his mistake. He had been in business for many years, and this was the first complaint he had received. Any shortness of weight was without his knowledge. Mr. Baggallay, the magistrate, said there was clearly a false trade description, and the defendant had not proved that he was unaware of what was going on. He fined the defendant £10 and £10 10s. costs.

CLERKS OF WORKS' ASSOCIATION.

The twentieth annual dinner of the Clerks of Works' Association was held in the King's Hall of the Holborn Restaurant last Monday week, February 16th, under the chairmanship of Mr. Christopher Harston, J.P., F.R.I.B.A. There was a very large attendance of members and visitors, over 300, making a record in the history of these gatherings, completely filling the hall. An excellent menu was afforded, and the following artists entertained the company:—Miss Florence Ogilvey, Miss Carrie Tubb, and Messrs. Will Edwards, Park Hunter, George Schneider, Ernest Pike and Thomas Lynes. Mr. Harston having given the loyal toasts from the chair, Mr. F. Walker proposed the toast of the "Architects and Surveyors." He said he hoped soon to see established a Chair of Architecture at the Universities of Oxford and Cambridge. We were always praising the work and the men of the past, and not sufficiently the men in our midst, until it became too late. There was, however, a hard-worked and often scantily paid body of men known as clerks of works who, of all men, were in a position to know the vast amount of strenuous thought absorbed in every well-arranged scheme before even the first brick could be laid. Mr. Edwin T. Hall, F.R.I.B.A., and Mr. W. T. Farthing, F.S.I., responded. Mr. John Pain in proposing the toast of "The Worshipful Company of Carpenters" referred to the many favours the Association had received at their hands, accommodation for their meetings being provided at Carpenters' Hall and the use of the library granted to the members. Mr. J. Hutton Freeman, the new clerk to the Company, in response thought the Carpenters' Company equally owed a debt of gratitude to the Association for the help they gave in the examinations. He called attention to the certificates granted by the Company to clerks of works who successfully passed a special examination; these he thought acted as a sort of hall-mark of their knowledge. The Chairman in proposing the toast of "The Clerks of Works Association," said he was glad to hear of the incorporation of the Association so as to allow it to extend its scope. Clerks of works were necessarily separated and scattered all over the country, and they occupied very responsible positions, and a society such as this had a great influence in maintaining integrity among its members. He was not an advocate of the principle of sending young men from the office to act as clerks of works. It would be a good thing for the young men, no doubt, but not for the client. Mr. James Petrie, president, in response, said it was proposed to form a benevolent fund in connection with the Association. Mr. J. T. Rees, vice-president, proposed "The Press and Visitors," which was replied to by Mr. E. W. Harvey Piper and Mr. John Hill. Mr. John Davies concluded the toasts with "The Chairman."

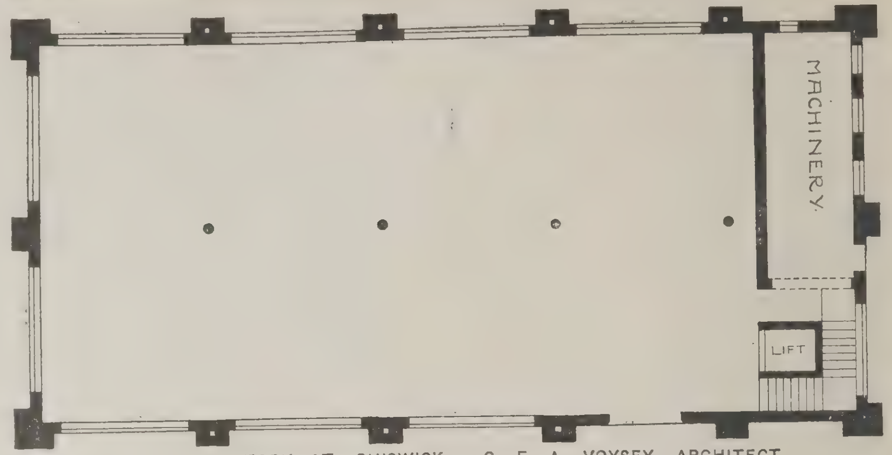
Space in Bakehouses.—The Home Office has addressed a letter to the National Association of Master Bakers and Confectioners asking its opinion on a proposal, which is supported by the Society of Medical Officers of Health, that the Secretary of State should make an order increasing the standard of cubic space per worker in bakehouses from the 250 cub. ft. at present prescribed to a minimum of 500 cub. ft. The reasons urged on behalf of this proposal are the laborious work carried on in bakehouses, the high temperature maintained and the fact that little ventilation takes place. To these may be added the general use of gaslight in bakehouses, the evolution of fermentation products in baking, and the evolution of steam and the like when a batch of bread is drawn.

Bricks and Mortar.

Aphorism for the Week.

A true architect is far more likely to be a practical man than a practical man is likely to be an architect.—R. NORMAN SHAW.

Our Plates. THE architect of the factory at Chiswick for Messrs. A. Sanderson & Sons, Turnham Green, Chiswick, is Mr. C. F. A. Voysey, of 23, York Place, W. This factory has been built for block printing. It is faced with Messrs. Broad & Son's white-glazed bricks, with Staffordshire blue bricks as black as they could be got for the 6ft. plinth, strings and window arches, sills and jambs. The coping is in Portland stone. The piers carry the floors and the roof, and in addition act as ventilating shafts. The roof, having to be half glass and half slate, is carefully concealed from view. The general contractors were Messrs. Prestige & Co., the metalwork being carried out by Messrs. Lindsay, Neal & Co., and the glazing by Messrs. Pennycook & Co. The cost of the whole work was under £10,000.—The Old Custom House, Sunderland, is situated in Silver Street, adjoining the new municipal model dwellings in the "hat case area" district. The house was originally built by Mr. Edward Brown, in 1727, as a private residence, with several dwelling-houses adjoining intended for the residence of the captains of his ships and other persons in his employ. The mansion-house at that period was surrounded with gardens, and commanded an extensive view of the sea. The street was afterwards known as "Fitters Row." Fitters was the name of the agent for coal-owners: he sold the coals to shippers. After the death of the original owner, in 1730, the mansion-house was used as the Custom House for the port until the year 1837, when the present Custom House was built. It afterwards became the home of the Sunderland Boys Industrial School, which was established by members of the Society of Friends, and is yet principally supported by them. The original builder of the house was also a member of the same religious society. The house is the only one left of the once famous row of Fitters' houses in Sunderland. The treads of the staircase, which is still in good condition, are solid and are made of oak.—The caretaker's lodge at Wells Road Board School, Bristol, was erected in connection with large Board schools recently designed by Mr. H. Dare Bryan, F.R.I.B.A. It is perfectly simple and yet conveys the impression that its use is of semi-official character.—Mr. M. H. Baillie Scott's drawing shows a proposed addition to a house which was recently built from his designs at Crowborough.



PLAN OF FACTORY AT CHISWICK. C. F. A. VOYSEY, ARCHITECT.

Exhibition Juries. THE methods for building up the juries of the St. Louis Universal Exhibition, 1904, have just been settled. In general plan the arrangements follow those drawn up by the French authorities in 1900, although, in several particulars, it has been found necessary to adapt the French rules to what may be defined as the "American idea," and also to the special character of the St. Louis Exhibition. The total number of jurors in the International Jury of Awards will be 2 per cent. of the total number of exhibitors, each nation with fifty or more exhibitors being entitled to representation on the jury. Of this selected body of International jurors three graded juries will be constituted, viz., group juries, department juries and a superior jury. One hundred points will be the highest collective marking and will represent perfection, while the awards, four in number, will be allotted as follows:—Exhibits receiving 60 to 74 marks inclusive, bronze medal; 75 to 84, silver medal; 85 to 94, gold medal; 95 to 100, grand prize.

Ancient Grecian Architecture. THE annual meeting of the Grecian Archæological Society was held at Athens last week. M. Kavvadias gave an interesting summary of its work during the last twelve months. Outside Greece it has made substantial progress with the excavation of the famous temple of Hera, at Samos, which Herodotus declared to be the "largest of all the temples which he had seen," and which is nearly double the size of the Parthenon. Within the Greek kingdom the restoration of the Lion of Chæronea and the reconstruction of the celebrated temple at Bassæ have been begun. Colonel Leake prophesied nearly a century ago that Greece, if free, could easily restore the latter building out of the fragments lying around it. The strengthening of the Parthenon, the restoration of the Erechtheion, the repairs to the wall of the Stoa of Attalos, and the building of museums at Chalkis, Nauplia, Sautorin and Mykonos complete the work of a very active year. The excavation of the ancient market-place will very shortly be begun, as the compensation due to the owners of property on its site is found to be smaller than was expected.

A Bridge of the Future. IT is now stated that there seems a real probability of the proposed bridge across Sydney Harbour being at last constructed. When it is many politicians will miss it. For forty years the North Shore Bridge has been used to win votes on the northern side of the harbour. In 1885, when Sir George Dibbs became Premier, he went to North Shore for re-election, and he was opposed by Sir Harry Parkes, whose chances were thought hopeless, in view of his opponent's popularity. People had grown tired of hearing about the bridge question, and it had been dropped for some time. But Parkes brought it up at the hustings when he was nominated, described what it would be like, and then recited:—

> "'In that straight path a thousand
> May cross as soon as three;
> Now who will stand at my right hand,
> And build the bridge with me?'
> "Out spake the bold electors—
> 'Four thousand strong are we;
> We'll all abide on every side,
> And build the bridge with thee.'"

Parkes got in, and became Premier again, but the bridge is not built yet!

Newland Church. THE old parish church of Newland, Hull, has been reopened, with enlarged and improved accommodation. The opening of the church completes a scheme which has taken many years to carry out. Originally the church was an uninteresting oblong building. The first portion of the work, carried out in 1893, consisted of the erection of a chancel and aisle, the latter being used as an organ-chamber and vestries, and also substituting traceried windows in the south aisle for the plain lancet windows of the original church. From time to time additions were made to the chancel by panelling the walls in oak and the erection of a fine carved oak reredos, and the provision of a stained-glass east window. The work dedicated embraced the removal of the gallery and west wall, and extending the church westward by providing porches and a baptistery. A new and spacious north aisle has also been erected. At the end of this aisle an arch has been opened, and here an oak screen has been erected to the memory of Mr. and Mrs. Henry Moor. The work has been carried out according to the designs of Messrs. Brodrick, Lowther & Walker architects, of Hull, at a cost of about £2,500,

Terra-Cotta. MR. CHARLES GREEN, the Master of the Sheffield Art-Crafts Guild, read a paper on "Terra-cotta" before the members last week. He said it was prehistoric in its origin, and in some cases formed the only connecting link with the past. The composition of the burnt bricks of the ancients was practically identical with that of the terra-cotta of to-day, but the term now was used to refer to artistic work moulded in the plastic state. There was no material which presented such advantages to the sculptor, and modern architects were using it in building. Sheffield possessed a few specimens of the art. The sign of the Angel Inn was done by Charles Rossi, an R.A. born in Sheffield, from clay taken from Attercliffe Common. Other examples of terra-cotta work were to be found at the Channing Hall and the School of Art. The pediment and medallions on the Theatre Royal were done by a poor travelling artist. Godfrey Sykes, a Sheffield man, was a widel known worker in terra-cotta; the Weston Park gates were executed by him, as also wa the column which represented the life of man given to the town by the South Kensington authorites as a memorial of Sykes Terra-cotta frequently had proved mor durable than stone in resisting the effect of time and weather. The lecture wa illustrated by slides, some lent by Messrs Doulton & Co.

To restore the Town Church of St Andrews £23,500 is being appealed fo Sketch plans of the proposed restoration have been prepared by Mr. P. Macgrego Chalmers, I.A. The main idea is to preserv the fine old tower and all that remains c the mediæval church, and to rebuild th remainder upon the original plan, so far a it can be ascertained. The galleries will b removed; the side aisles will be reduced t their original height; and the old clearstor will be reproduced on pillars and arche occupying their ancient places. The wal will be of stone throughout, and the greate part of the seats will be of oak.

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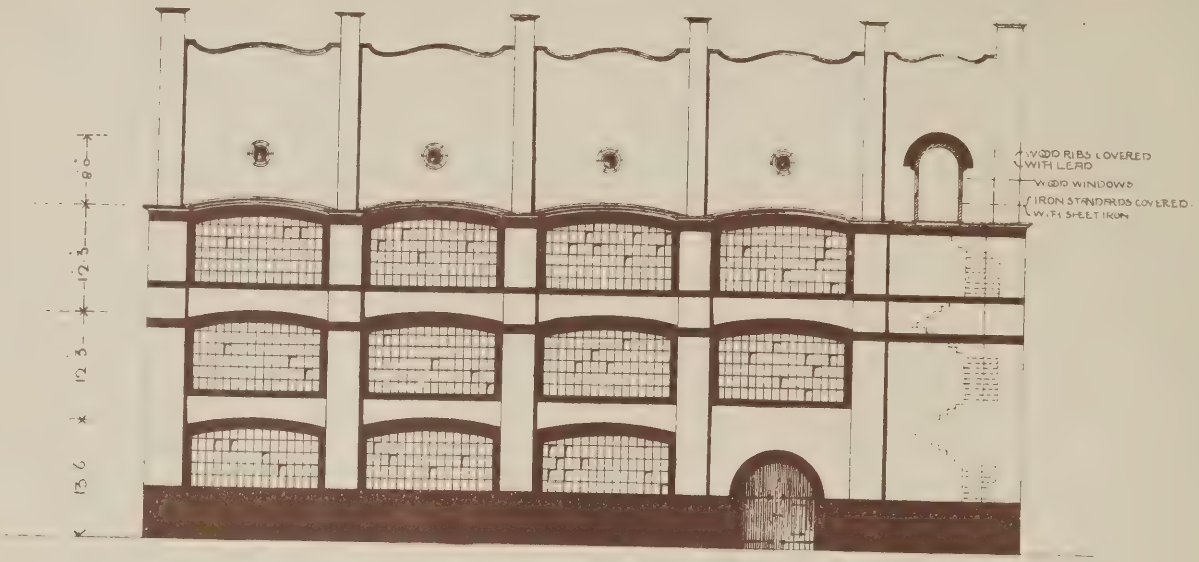
Wednesday, February 25th, 1903.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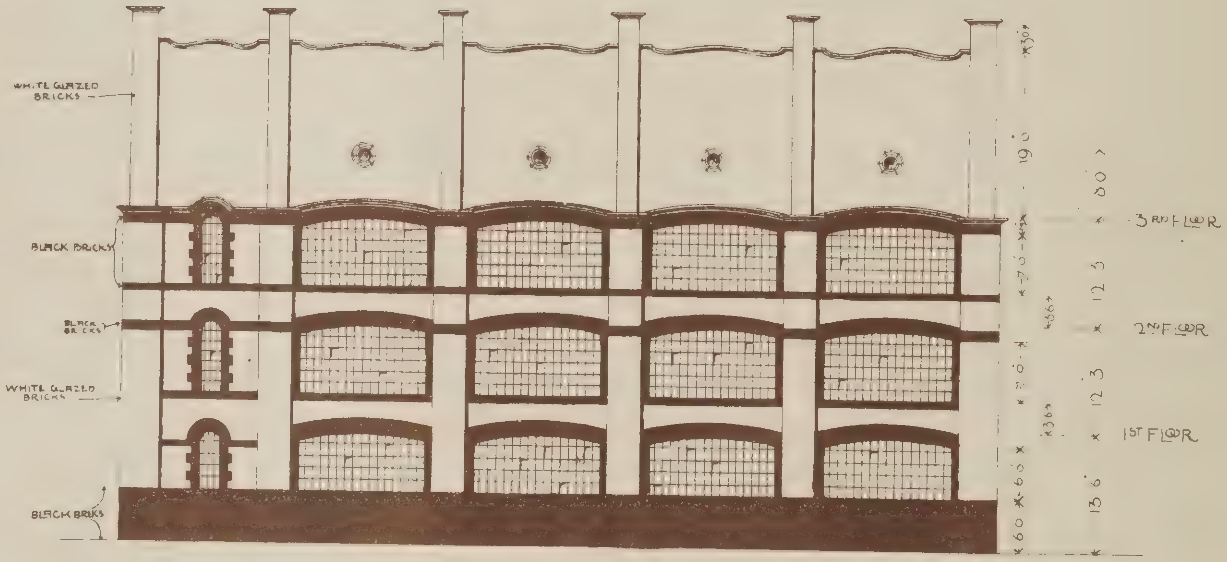
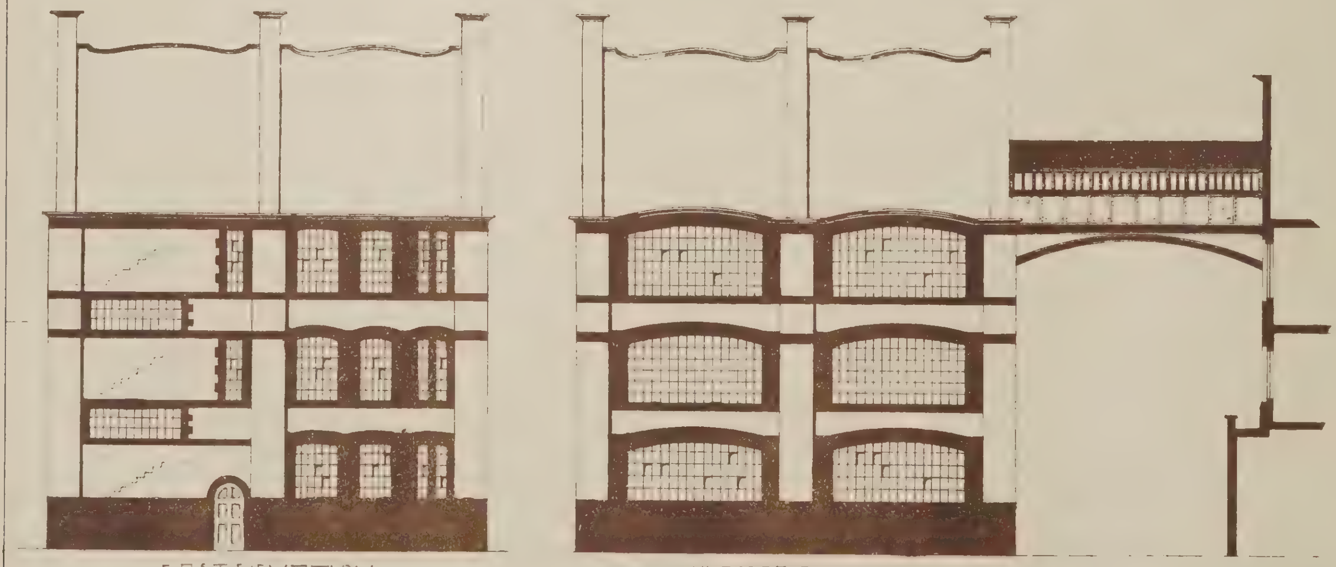
WOOD RIBS COVERED WITH LEAD
WOOD WINDOWS
IRON STANDARDS COVERED WITH SHEET IRON

SOUTH ELEVATION



NORTH ELEVATION



EAST ELEVATION

WEST ELEVATION

"PHOTO-LITHO." R. J. EVERETT & SONS, 56 LUDGATE HILL, E.C.

FACTORY AT CHISWICK. C. F. A. VOYSEY, ARCHITECT

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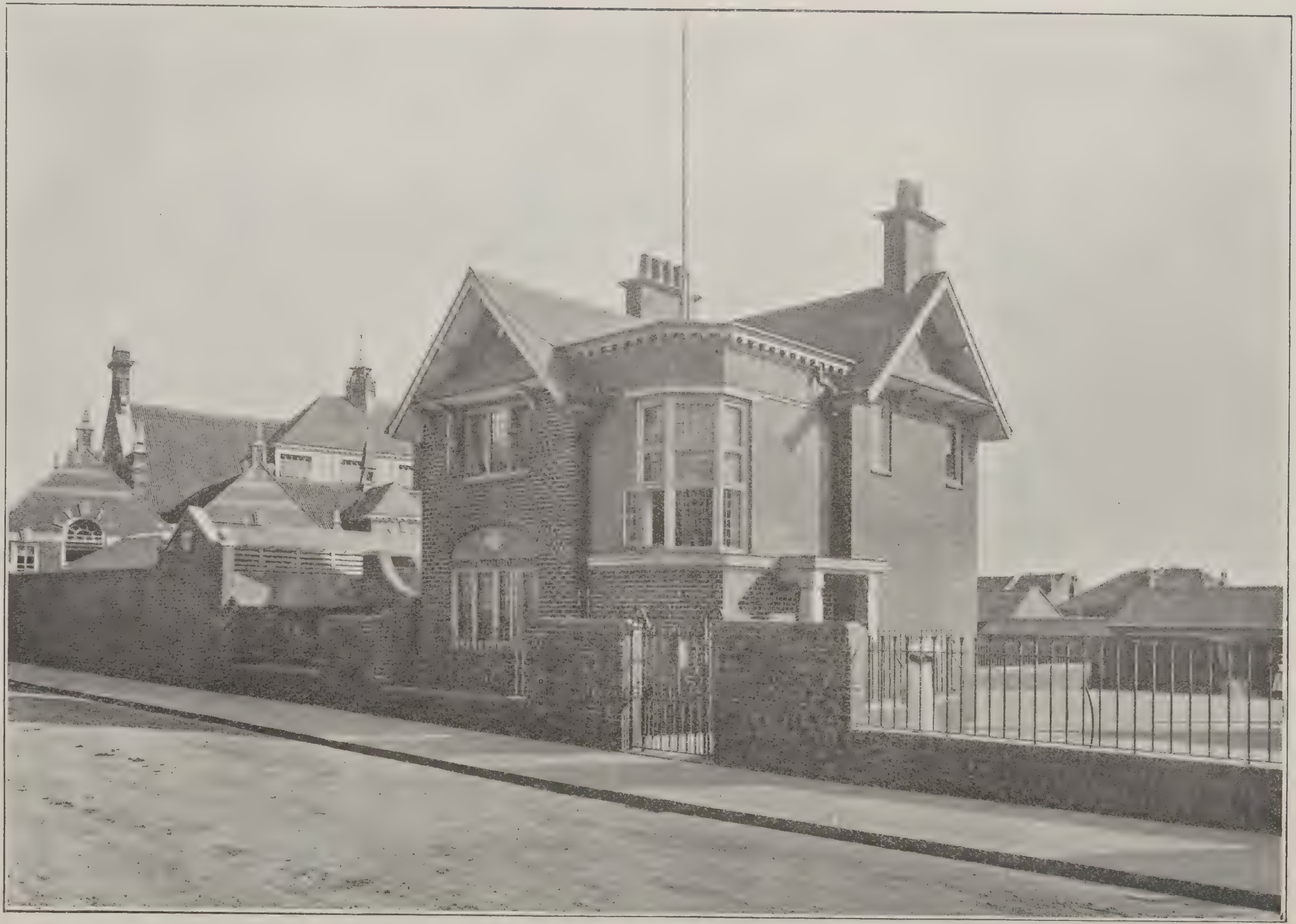

Caretaker's Lodge Wells Road Board School, Bristol. H. Dare Bryan, F.R.I.B.A., Architect.

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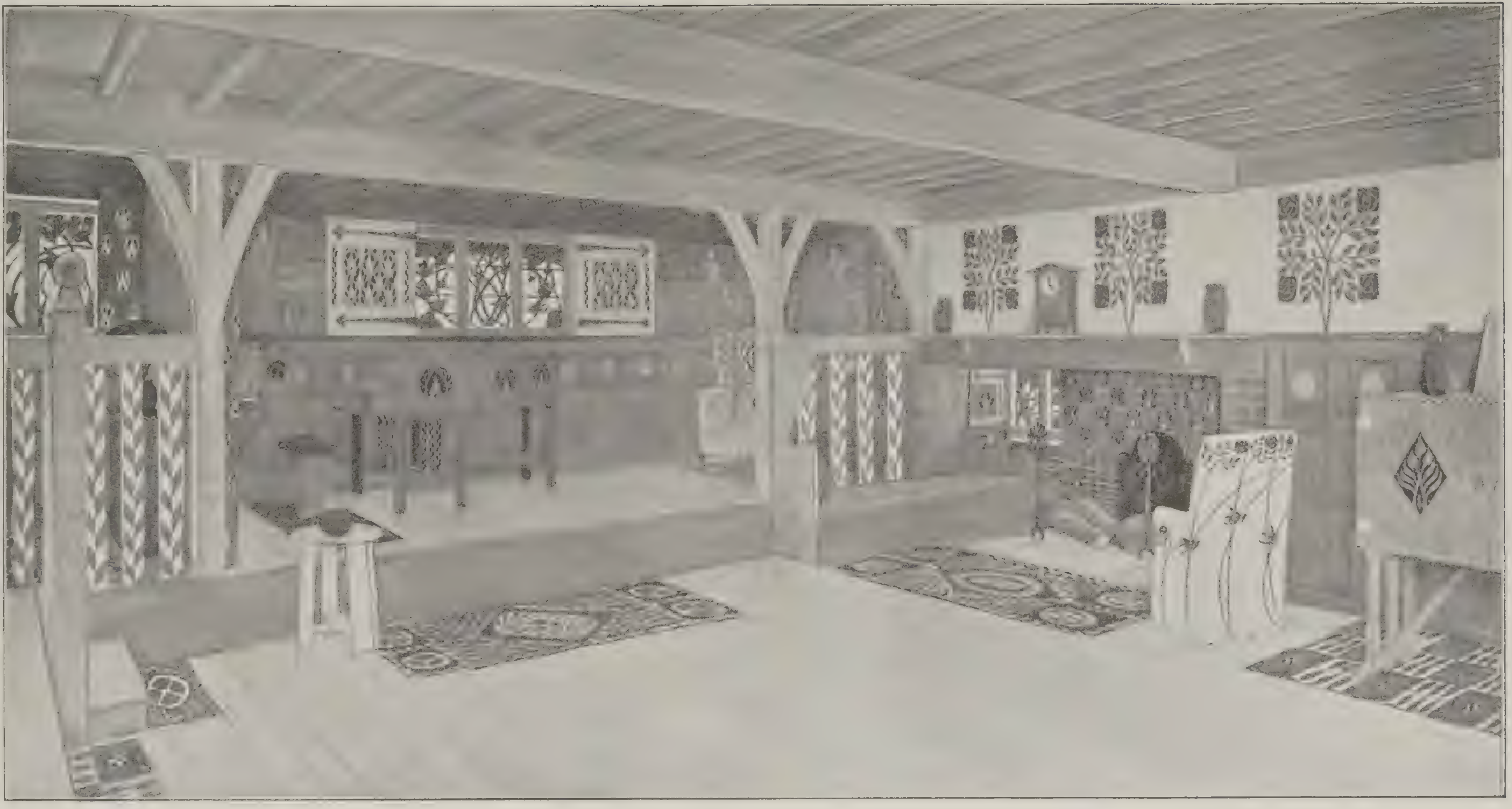

DINING-ROOM, HOUSE AT CROWBOROUGH, TUNBRIDGE WELLS. M. H. BAILLIE SCOTT, ARCHITECT.

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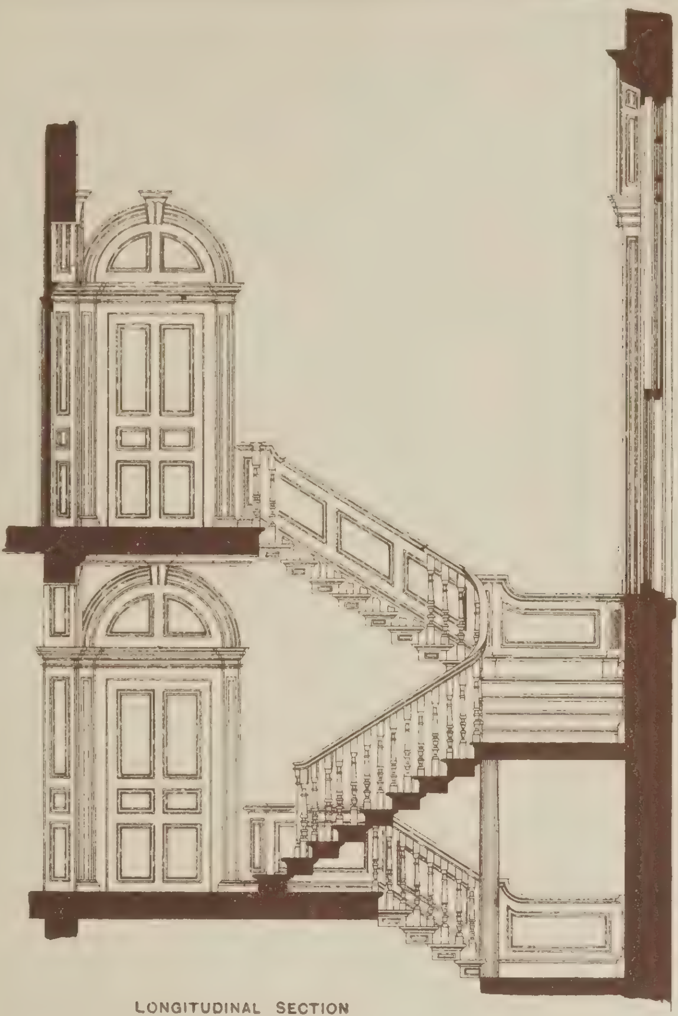
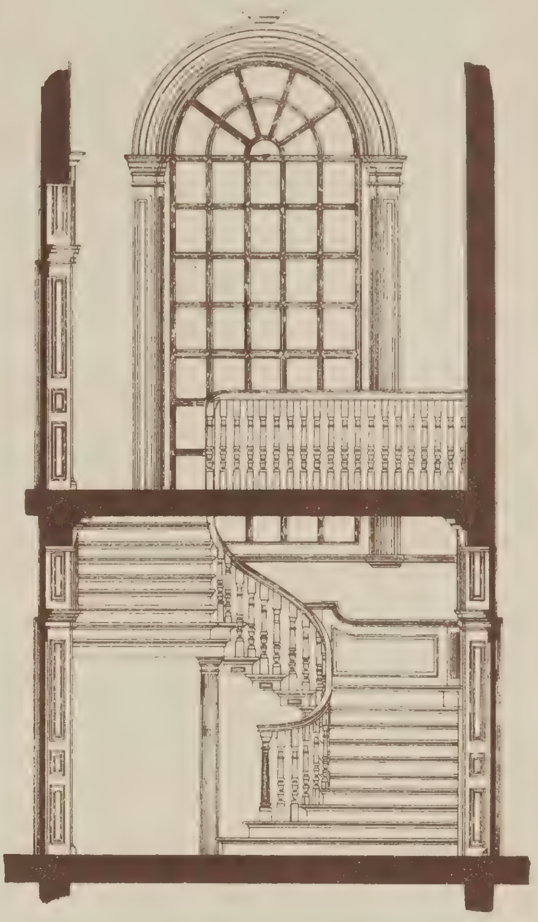
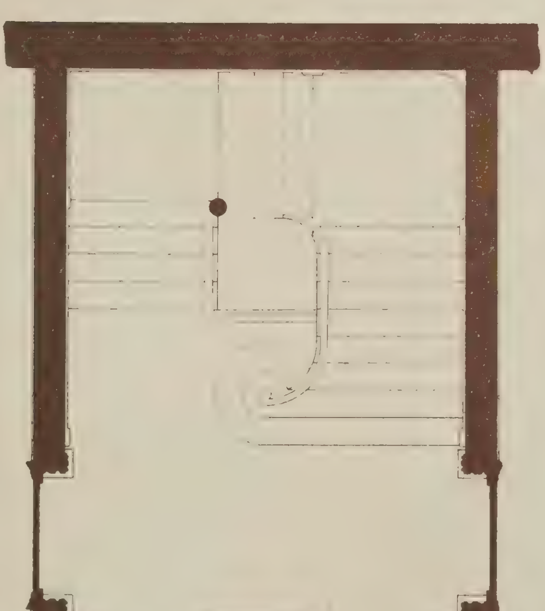


LONGITUDINAL SECTION

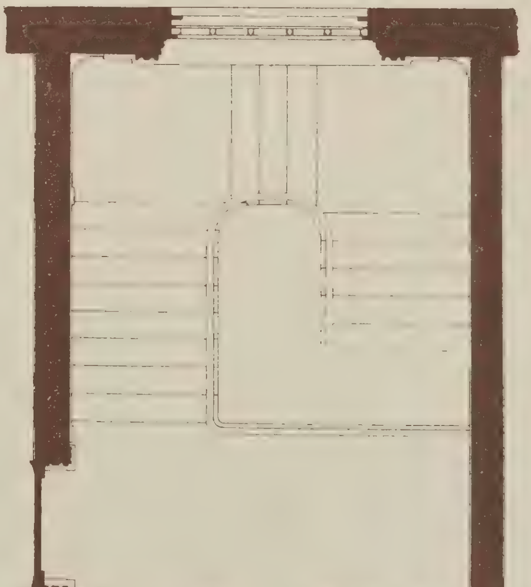


CROSS SECTION



GROUND PLAN.

SCALE 0 1 2 3 4 5 6 7 8 FEET.



UPPER FLOOR.

STAIRCASE IN HOUSE, SILVER STREET, SUNDERLAND MEASURED AND DRAWN BY J F BELL.

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Coming Events.

Wednesday Feb. 25.

NORTHERN ARCHITECTURAL ASSOCIATION.—Mr. G. B. Aitken, F.S.A., on "Architecture and the Age," 7.30 p.m.

ARCHITECTURAL ASSOCIATION (Discussion Section).—Mr. W. L. Trant Brown on "Valuations," 7.30 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. Daniel Macfie on "Artificial Lighting in the Nineteenth Century," 8 p.m.

Thursday, Feb. 26.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Technical Demonstration on Limes, Gypsum, Lathing, Plastering and Scagliola, at Messrs. George Rome & Co., 3 Lombard Street, Westland Row, Dublin, at 4 p.m.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—Mr. Frederick Musto, A.R.I.B.A., on "Street Improvements in Leeds and elsewhere," 6.30 p.m.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

IMPERIAL INSTITUTE.—Exhibition of Irish Building Stones and Minerals opens.

INSTITUTION OF ELECTRICAL ENGINEERS.—General Meeting at Institution of Civil Engineers at 8 p.m.

Friday, Feb. 27.

INSTITUTION OF CIVIL ENGINEERS (Students' Meeting).—Mr. E. Falk on "The Relative Advantages of Single Screws, Twin Screws and Triple Screws, for Marine Propulsions," 8 p.m.

Saturday, Feb. 28.

BUILDERS' FOREMEN'S ASSOCIATION.—Mr. A S. E. Ackerman, A.M.I.C.E. M.S.I, on "Some Notes on Sanitary Arrangements and Testing."

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to the Usher Institute of Public Health.

Monday, March. 2.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Business meeting: Election of Royal Gold Medallist.

SURVEYORS' INSTITUTION.—Junior meeting at 7 p.m.

SOCIETY OF ENGINEERS.—Meeting at 7.30 p.m.

LIVERPOOL ARCHITECTURAL SOCIETY.—Mr. Sidney K. Greenslade, A.R.I.B.A., on "Libraries in America."

Tuesday, March 3.

GLASGOW ARCHITECTURAL ASSOCIATION.—Mr. Alexander Wright on "Italian Architecture."

ARCHITECTURAL ASSOCIATION OF IRELAND.—Meeting at 7.45 p.m.

Wednesday, March 4.

EDINBURGH ARCHITECTURAL ASSOCIATION (Associates' Section).—Mr. James Gillespie on "Some Notes on Towers and Steeples," 8 p.m.

SURVEYORS' AND AUCTIONEERS' CLERKS' PROVIDENT ASSOCIATION.—General Meeting at Auction Mart at 7 p.m.

INSTITUTE OF SANITARY ENGINEERS, LTD.—Special Council meeting at 7 p.m.

Thursday, March 5.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Technical Demonstration of Home Drainage, Plumbing, Sanitary Fittings, Heating and Hot Water, Water Mains and Service Pipes, Pumps and Hydraulic Rams, at Mr. William Baird's, 12 Lower Abbey Street, Dublin, 4 p.m.

CHEMICAL SOCIETY.—Meeting at 8 p.m.

Friday, March 6.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Mr. James C. Walker on "Planning and Construction of Burgh Buildings," 8 p.m.

ARCHITECTURAL ASSOCIATION.—Messrs. H B. Creswell and A. W. S. Cross on "Competitions," 7.30 p.m.

JUNIOR INSTITUTION OF ENGINEERS.—Mr. W. T. George on "Practical Notes on the Use and Maintenance of Electric Motors for Factory Purposes," 8 p.m.

Saturday, March 7.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE SCIENTIFIC SOCIETY.—Mr. Joseph Menmuir on "Low-Pressure Switch Gear," 7.30 p.m.

BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Meeting at Carpenters' Hall at 6 p.m.

Current Market Prices.

FORAGE.

		£	s.	d.	£	s.	d.
Beans	per qr.	1	9	9	1	12	3
Clover, best	per load	4	10	0	5	0	0
Hay, best	do.	3	15	0	5	10	0
Sainfoin mixture ..	do.	3	15	0	4	5	0
Straw	do.	1	8	0	1	18	0
OILS AND PAINTS.							
Castor Oil, French ..	per cwt.	1	1	0	1	2	2
Colza Oil, English ..	do.	1	4	3		—	
Copperas	per ton	2	2	6		—	
Lard Oil	per cwt.	2	13	0	2	14	0
Lead, white, ground, carbonate	do.	1	4	10		—	
Do. red	do.	1	0	4½			
Linseed Oil, barrels ..	do.	1	5	4½		—	
Petroleum, American ..	per gal.	0	0	5⅜		—	
Do. Russian .	do.	0	0	4¼	0	0	4⅜
Pitch	per barrel	0	7	0		—	
Shellac, orange	per cwt.	6	0	0		—	
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Home Melt ..	per cwt.	1	10	9		—	
Tar, Stockholm	per barrel	1	1	6		—	
Turpentine	per cwt.	2	3	9		—	
METALS.							
Copper, sheet, strong ..	per ton	71	0	0		—	
Iron, Staffs., bar	do.	6	5	0	8	10	0
Do. Galvanised Corrugated sheet ..	do.	11	2	6	11	7	6
Lead, pig, Soft Foreign ..	do	12	2	6		—	
Do. do. English common brands	do.	12	5	0	12	7	6
Do. pig, English 3lb. per sq. ft. and upwards	per ton	13	10	0		—	
Do. pipe	do.	14	0	0		—	
Nails, cut clasp, 3in. to 6in.	do.	9	5	0		—	
Do. floor brads	do.	9	0	0		—	
Steel, Staffs., Girders and Angles	do.	5	15	0	6	5	0
Do. do. Mild bars ..	do.	6	10	0	7	0	0
Tin, Foreign	do.	133	10	0	134	0	0
Do. English ingots ..	do.	135	0	0	135	10	0
Zinc, sheets, Silesian ..	do	24	0	0		—	
Do. do. Vieille Montaigne	do.	24	10	0		—	
Do. Spelter	do.	20	2	6	20	5	0
TIMBER.							
SOFT WOODS.							
Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow ..	do.	5	5	0	6	5	0
Do. Pitch	do.	3	0	0	3	4	0
Laths, log, Dantzic ..	per fath.	4	10	0	5	10	0
Do. Petersburg ..	do.	7	5	0		—	
Deals, Archangel—2nd White, 3×9 ..	per P.Std.	10	15	0		—	
Do. 3×7 ..	do.	8	15	0		—	
3rd White, 3×11 ..	do.	9	10	0		—	
Do. 3×9 ..	do.	9	15	0		—	
Deals, Haparanda—1st Yellow, 2×4 ..	do.	8	10	0		—	
Deals, Riga	do.	6	15	0	12	10	0
Do. Petersburg 1st Yellow	do.	10	10	0	11	5	0
Do. do. 3rd Yellow 3×11	do.	9	15	0		—	
Do. do. do. 3×7	do.	8	5	0		—	
Do. do. do. 2½×7	do.	8	15	0		—	
Do. do. 3rd White, 3×11	do.	8	15	0		—	
Do. do. do. 3×7	do.	7	15	0		—	
Do. Gefle, 1st and 2nd Yell. 3×11	do.	18	10	0		—	
Do. do. do. 4×9	do.	17	15	0		—	
Do. do. do. 3×9	do.	16	5	0		—	
Do. Nederkalix, 1st Yell., 2½×7	do.	9	15	0		—	
Do. Wyburg, 1st & 2nd Yell. 3×9	do.	9	15	0		—	
Do. Pitea, Yell. unsrtd., 3×9	do.	10	15	0		—	
Do. do. do. 2½×7	do.	9	5	0		—	
Do. Raumö, Yell., unsorted, 3×9	do.	10	15	0		—	
Deals, Mesane, 3rd White 3×11	do.	9	15	0		-	
Do. do. do. 3×9	do.	9	10	0		-	
Do. Galatz, 2nd White, 3×11	do.	9	10	0		—	
Do. do. 3rd do. 3×11	do.	8	15	0			
Do. do. 4th do. 2½×11	do.	7	5	0		—	
Do. White Sea ..	do.	12	15	0	15	5	0
Do. Quebec Pine—1st Bright Yell., 3×8×12ft. and 13ft ..	do.	18	10	0		—	
Do. do. do. 3×7 ..	do.	18	0	0		-	
Do. do 1st Red, 3×6	do.	12	15	0		—	
Do. Montreal Yell. Pine, 2nd, 3×11×16ft & 17ft.	do.	18	15	0	19	5	0
Do. do. do. 3×9	do.	13	10	0	14	15	0
Do. Quebec, White Spruce—1st, 3×9 up to 14ft.	do.	13	5	0		—	
Do. 3×7	do.	12	0	0		—	
2nd, 3×6 to 3×9 ..	do.	8	10	0		—	
Do. 3×7 ..	do.	8	0	0		—	
Do. English Bay, White Spruce, 2nd, 2×7 ..	do.	8	0	0		—	
Do. New Brunswick ..	do.	7	15	0	8	0	0
Battens, all kinds ..	do.	6	15	0	12	5	0
Flooring Boards 1in. prepared, 1st	per square	0	10	6		—	
Do. 2nd	do	0	10	0	0	10	6
Do. 3rd &c.	do	0	7	9	0	10	3
HARD WOODS.							
Ash, Quebec	per load	3	12	6		—	
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	15	0	0	20	0	0
Cedar, Cuba	per ft. sup.	0	0	3¾	0	0	5
Do. Honduras ..	do.	0	0	$4\frac{5}{16}$		—	
Do. Tobasco	do.	0	0	$4\frac{13}{32}$		—	
Elm, Quebec	per load	4	0	0	5	2	6
Mahogany, Average Price for Cargo, Honduras ..	per ft. sup.	0	0	5¾		—	
Do. African ..	do.	0	0	4¾		—	
Do. St. Domingo	do.	0	0	3¼	0	0	6
Do. Tobasco ..	do.	0	0	$4\frac{21}{32}$		—	
Do. Cuba ..	do.	0	0	4¼	0	0	8⅞
Do. Lago ..	do.	0	0	$3\frac{15}{16}$	0	0	4⅞
Oak, Dantzic and Memel	per load	3	5	0	3	15	0
Do. Quebec	do.	6	5	0		10	0
Teak, Rangoon, planks ..	do.	16	0	0	17	10	0
Wainscot, Riga (Baulk)	do.	3	15	0	5	15	0
Walnut, Odessa Crown	do.	3	15	0	5	15	0
Do. American ..	per ft. cube	0	2	0		—	
Do. Lagos	per ft. sup.	0	0	$3\frac{19}{32}$		—	

New Companies.

J. BALLINTINE, LTD., builders, contractors, &c., Strand Road, Derry. Capital: £40,000 in 800 preference shares of £10 each and 3,200 ordinary shares of £10 each.

BECTON PARK ESTATES CO., LTD. Capital: £2,000 in £1 shares.

ALBERT TRUCKEL & CO., LTD., cartage contractors, sand, gravel, ballast, slate and brick merchant, 28, Broughton Street, Battersea, S.W. Capital· £1,500 in £1 shares.

SKIPWORTH & JONES, LTD., constructional steel and general engineers, Trafford Park, Manchester. Capital: £6,000 in £1 shares.

CLAREMONT PARK ESTATE CO., LTD. Capital: £10,000 in £1 shares.

ALLEN & SON (HALIFAX), LTD.. glazed-brick works, Halifax. Capital: £20,000 in £10 shares (1,000 perference).

S. WOOD & SONS, LTD., manufacturers of bricks, tiles, terra-cotta and earthenware goods, Golds Green Brickworks, Golds Green, West Bromwich, Staffs. Capital: £5,000 in £1 shares.

Guaranteed Gearing

ROBERT ADAMS,
65 & 67, Newington Causeway, LONDON, S.E.

The Originator and Leading Maker of the Modern System of Ventilating Gearing.

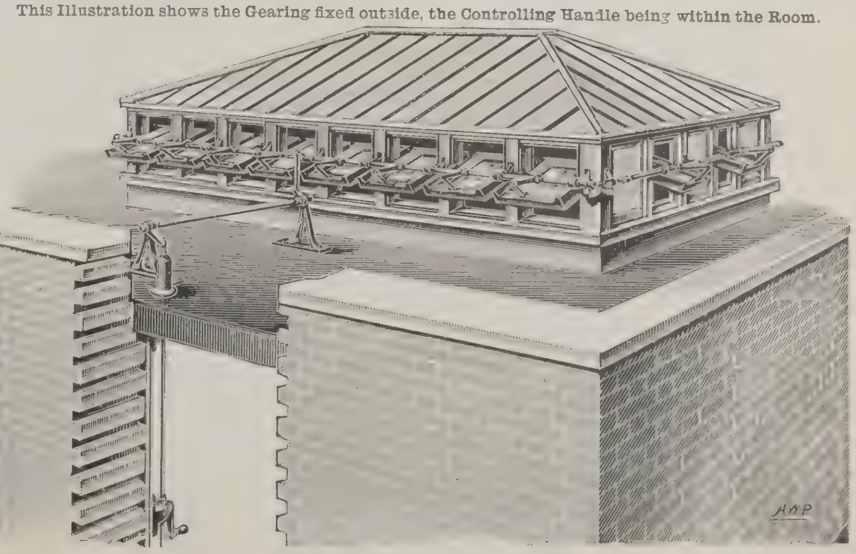
HIGHEST AWARDS AT PARIS, 1900.

"ADAMS' SPECIAL CONTINUOUS GEARING"

used in most of the best known Public Buildings in the United Kingdom.

ILLUSTRATED PRICE LISTS ON APPLICATION.
FIFTEEN GOLD MEDALS AWARDED.

This Illustration shows the Gearing fixed outside, the Controlling Handle being within the Room.



Complete List of Contracts Open.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
		BUILDING:		
Feb.	27	Fraserburgh, Scotland—Shop and Warehouse	——	A. McDonald & Sons, Merchants, Cross Street, Fraserburgh.
"	27	Leicester—Three Underground Conveniences	Corporation	E. G. Mawbey, Borough Surveyor, Town Hall, Leicester.
"	27	Longwood, near Huddersfield—Twenty-three Houses	——	J. Berry, 3 Market Place, Huddersfield.
"	27	Thornbury, near Bradford—Hospital Ward, &c	Calverley Joint Hospital Board	Kay & Long, 10 St. Paul's Street, Leeds.
"	27	Tilshead, Wilts—School Buildings	School Committee	J. Harding & Sons, 58 High Street, Salisbury.
"	27	Swalwell—School Additions	Whickham School Board	J. W Rounthwaite, 13 Moseley Street, Newcastle-on-Tyne.
"	27	Worksop—Shedding, Grand Stand, &c.	Nottingham Agricultural Society	W H. Bradwell, Secretary Thurland Street, Nottingham.
"	27	Earlestown, Lancs—Lime, Bricks, &c.	Newton-in-Makerfield U.D.C.	Stores Clerk, Gasworks, Earlestown.
"	27	Uzon, near Montrose, Scotland—Coastguard Station	——	Watch-room, Coastguard Station, Montrose.
"	27	Okehampton—Church	——	T. H. Chamings, Okehampton.
"	28	Forres, Scotland—House	——	P. Fulton, Architect, Forres
"	28	London, W.—Works and Materials	Paddington Borough Council	Borough Surveyor, Town Hall, Paddington, W.
"	28	Fanad Head, Ireland—Coastguard Station	——	H. Williams, Secretary, Office of Public Works, Dublin.
"	28	Aberfan, Wales—Thirty-three Cottages	——	R. Edwards, Architect, Treharris.
"	28	Batley—Central Stores	Co-operative Society, Ltd.	H. B. Buckley, 85 Commercial Street, Batley.
"	28	Burnley—Schools	School Board	T. Bell, 14 Grimshawe Street, Burnley.
"	28	Cwmtillery, Wales—Additions to Hotel	Griffiths Brothers, Ltd.	Landsdowne & Griggs, Architects, Metropolitan Bank Chambers, Newport, Mon.
"	28	Sheffield—Power Station Works	Electric Light Committee	S. E. Fedden, Engineer, Corporation Electric Supply Depôt, Commercial Street, Sheffield.
"	28	Stow, Suffolk—Alterations, &c., to Workhouse	Union Guardians	J. S Corder, Architect, Wimborne House, Tower Street, Ipswich.
"	28	Stafford—Stores	Industrial Co-op. Soc., Ltd.	J. T. Freakley, 1 St. Patrick's Place, Stafford.
"	28	Treorcky, Aberdare and Merthyr—Police Stations, &c.	Glamorgan County Council	T. M. Franklen, Clerk, Westgate Street, Cardiff.
March	1	Belfast—Classroom	——	T. Barkley, 82 Royal Avenue, Belfast.
"	1	Kilcar, co. Donegal—Church	Rev. A. M'Nelis, P.P.	Doolin, Butler & Donelly, Architects, Dawson Chambers, Dublin.
"	2	Southend-on-Sea—Brick, Cement, &c.	Corporation	E. J. Elford, Borough Surveyor, Clarence Road, Southend.
"	2	Whitehaven—Bricks, Cement, &c.	Town Council	Borough Surveyor, Town Hall, Whitehaven.
"	2	Bristol—Lodging-house	Health Committee	T. H. Yabbicom, City Engineer, 63 Queen Square, Bristol.
"	2	Carbis Bay, Cornwall—Five Houses	A. C. Jenkin	H. Madden, Architect, Clarence Street, Penzance.
"	2	Ebbw Vale, Mon.—Wall	Urban District Council	T. J. Thomas, Town Surveyor, Ebbw Vale.
"	2	Liversedge, Yorks—Reconstructing Inn	——	W. H. D. Horsfall, 6 Harrison Road, Halifax.
"	2	London, N.W.—Alterations, &c., to Public Washhouse	St. Pancras Borough Council	Surveyor, Town Hall, Pancras Road N.W.
"	2	Plymouth—Soldiers' Institute	——	T. R. Kitsell, 1 George Street, Plymouth.
"	2	Cromer—Shelter, &c.	Protection Commissioners	Douglass & Arnott, 15 Victoria Street, Westminster, S.W.
"	2	Dromin—Covering Steel Footbridge	Gt. Northern Rly. Co. (Ireland)	T. Morrison, Secretary, Amiens Street Terminus, Dublin.
"	2	Brighton—Power Station	Corporation	F. J. Tillstone, Town Clerk, Town Hall, Brighton.
"	2	Crayford—School	School Board	C. L. Morgan, 43 Cannon Street, E C.
"	2	Wolverhampton—Cement, Bricks, &c.	Corporation	G. Green, Borough Engineer, Town Hall, Wolverhampton.
"	2	York—Lime, Cement, &c.	Corporation	A. Creer, City Engineer, Guildhall, York.
"	3	Bridgewater—Sorting Office	Commnrs. of H.M. Works, &c.	Secretary, H.M. Office of Works, &c., Storey's Gate, S.W.
"	3	Darlington—Car Shed	Corporation	Borough Surveyor, Town Hall, Darlington
"	3	Great Yarmouth—Alteration of Boundary Walling, &c.	School Board	Olley & Haward, Queen Street, Great Yarmouth.
"	3	Hyde—Hospital	Corporation	J. Mitchell, Borough Surveyor, Hyde.
"	3	London, S.W.—Buildings	Chelsea Board of Guardians	Lansdell & Harrison, 65 and 66 Basinghall Street, E.C.
"	3	London, S.E.—Bricks, Cement, Lime	Deptford Borough Council	V. Orchard, 20 Tanner's Hill, Deptford, S.E.
"	3	Derby—Bricks, Cement and Lime, &c.	Town Council	J. Ward, Borough Surveyor, Municipal Offices, Babington Lane, Derby.
"	3	Knutsford, Cheshire—Buildings	Bucklow Union Guardians	R. J. M'Beath, Architect, Birnam House, Sale.
"	3	London, E.C.—Underground Convenience	Corporation	Engineer, Guildhall E.C.
"	3	Wimbledon—Fire Brigate Station	Urban District Council	C. H. Cooper, Engnr., Council Offices, The Broadway, Wimbledon.
"	3	Bradford—Chapel and School	——	A. Sharp, Architect, Pearl Assurance Bldgs., Market St., Bradford.
"	3	London, E.C.—Underground Convenience	Corporation	Engineer, Guildhall, E.C.
"	3	Knutsford—Administrative Block, &c.	Bucklow Union Guardians	R. J. M'Beath, Architect, Birnam House, Sale.
"	4	Maesteg—Additions, &c., to School	School Board	E. W. Burnett & Son, Architects, Jarrow House, Tondu.
"	4	London, S.E.—Lime, Cement and Bricks, &c.	Southwark Borough Council	Vestry Hall, 81 Borough Road, S.E.
"	4	Belfast—Four Villas	J. V. M'Entire	J. G. Lindsay, 1 Glengall Place, Belfast.
		ENGINEERING:		
Feb.	27	Blyth, Northumberland—Pilot Cutter	Pilots of Blyth	W. Campbell, 77 Folly Road, Blyth.
"	27	Bury, Lancs—Overhead Equipment of Tramways	Tramways Committee	Lacey, Clirehugh & Sillar, 2 Queen Anne's Gate, Westminster.
"	27	Evesham—Governor for Gas Mains	Corporation	P. H. Fletcher Engineer, Gasworks, Evesham.
"	27	Sunderland—Electrical Plant	Corporation	J. F. C. Snell, Borough Electrical Engineer, Town Hall, Sunderland.
"	27	Dewsbury—Engineering Works, &c.	Joint Hospital Board	Holton & Fox, Architects, Corporation Street, Dewsbury.
"	27	Mickleover—Septic Tank, &c.	——	J. S. Story, County Surveyor, County Offices, St. Mary's Gate, Derby.
"	28	Dunbar—Gasworks	Town Council	C. Notman, Town Clerk, Dunbar.
"	28	East Grinstead—Engines, &c.	Rural District Council	Downes & Cornewall-Walker, 45 Warwick Road, Redhill.
"	28	Vinaroz, Spain—Dredging	——	Civil Government of the Province of Castellon.
"	28	Singapore—Graving Dock	Tanjong Pagar Dock Co., Ltd.	Tanjong Pagar Dock Co., Ltd., 120 Fenchurch Street.
"	28	Stockport—Electric Tramways	Tramways Committee	J. Atkinson, Borough Surveyor, Central Buildings, Stockport.
"	28	Cockermouth—Waterworks	Rural District Council	J. B. Wilson, Engineer, Cockermouth.
March	2	Boston, Lincs—Heating Municipal Buildings	Town Council	J. Rowell, Architect, Borough Offices, Market Place, Boston, Lincs.
"	2	Dublin—Bridges	Great Northern Railway Co. (Ireland).	Engineer-in-Chief, Aimens Street Terminus, Dublin.
"	2	Herne Common Kent—Waterworks	Blean R.D.C.	W. D. Statham, Surveyor, Clifford Villa, Eddington, Canterbury.
"	2	Adelaide, Australia—Railway	——	Agent-General for South Australia, 1 Crosby Square, Bishopsgate Street Within, E.C
"	2	London, S.W.—Stores, Electricity Meters, &c.	Battersea Borough Council	Engineer, Electric Light Station, Lombard Road, S.W.
"	2	Glasgow—Tramways	Corporation	J. Young, 88 Renfield Street, Glasgow.
"	2	Glasgow—Hopper Barges	Clyde Navigation Trustees	G. H. Baxter, 16 Robertson Street, Glasgow.
"	2	London, S.E.—Electrical Stores	Bermondsey Borough Council	M. Vincent, Borough Electrical Engineer, Town Hall, Bermondsey.
"	2	Whitehaven—Electrical Stores	Town Council	Borough Surveyor, Town Hall, Whitehaven.
"	3	London, E.C.—Locomotives, &c.	Bombay, Baroda and Central India Railway Company.	T. W. Wood, Secretary, Gloucester House, Bishopsgate Street Without, E.C.
"	4	Warrington—Electrical Plant	Corporation	Preece & Cardew, 8 Queen Anne's Gate, Westminster.
"	4	Brynmawr, Wales—Waterworks	Urban District Council	Haller & Machell, Engineer, Corporation Chambers, Dewsbury.
"	4	Dunston and Gateshead—Railway	North-Eastern Railway Co.	C. A. Harrison, Forth Banks, Newcastle-on-Tyne.
"	4	Hull and Selby—Widening Railway	North-Eastern Railway Co.	W. J. Cudworth, Engineer, York.
"	4	York and Normanton—Widening Railway	North-Eastern Railway Co.	W. J. Cudworth, Engineer, York.
"	4	Bath—Gasholder Tank	Gaslight and Coke Co.	C. S. Ellery, Engineer, Gasworks, Bath.
"	4	Dublin—Four Under-line Bridges	Great Southern and Western Railway Co.	Company's Engineer, Inchicore, Dublin.
"	4	Semer, Suffolk—Pump	Cosford Union Guardians	Master, Workhouse, Semer.
		FURNITURE:		
Mar.	2	Bideford—Bedsteads, &c.	Union Guardians	R. T. Hookway & Son, Architects, Bideford.
		IRON AND STEEL:		
Feb.	27	Earlestown, Lancs—Stores	Newton-in-Makerfield U.D.C.	Stores Clerk Gasworks, Earlestown.
"	27	Exmouth—Water-Mains, &c.	Urban District Council	S. Hutton, Surveyor, Public Hall Chambers, Exmouth.
"	27	Navy Contracts—Iron Blocks, &c.	Admiralty	Director of Navy Contracts, Admiralty, S.W.
"	27	Clitheroe, Lancs—Ironmongery, Steam Tubes, &c.	Corporation	Gas Manager, Clitheroe.
"	28	London, W.—Stores	Paddington Borough Council	Borough Surveyor, Town Hall, Paddington, W.
Mar.	2	Goole—Cast-iron Main Pipes	Urban District Council	T. E. Franklin, Engineer Gasworks, Goole.
"	2	Bury, Lancs—Iron Castings, Ironmongery	Sewering, Paving and Streets Committee.	A. W. Bradley, Borough Engineer, Bank Street, Bury.
"	2	London, S.E.—Ironmongery, Sewers Ironwork, &c.	Bermondsey Borough Council	F. Ryall, Town Clerk, Town Hall, Bermondsey.
"	2	Southend-on-Sea—Iron Castings, Ironmongery, &c.	Corporation	E. J. Elford, Borough Surveyor, Clarence Road, Southend.
"	2	Whitehaven—Iron Castings, &c.	Town Council	Borough Surveyor, Town Hall, Whitehaven.
"	2	Glasgow—Rails, &c.	Corporation	J. Young, 88 Renfield Street, Glasgow.
"	2	Wolverhampton—Stores	Corporation	G. Green, Borough Engineer, Town Hall, Wolverhampton.
"	3	London, E.C.—Railway Stores	Bombay, Baroda and Central India Railway Co.	T. W. Wood, Secretary, Gloucester House, Bishopsgate Street Without, E.C.
"	3	Derby—Castings, &c.	Town Council	J. Ward, Borough Surveyor, Municipal Offices, Babington Lane, Derby.
"	4	London, E.C.—Stores	Southwark Borough Council	Vestry Hall, 81 Borough Road, S.E.

Complete List of Contracts Open —*continued.*

ATE OF ELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	PAINTING AND PLUMBING:		
26	Chatham—Painting	Corporation	C. Day, Borough Surveyor, Town Hall, Chatham.
27	Whitby—Painting	Guardians	W. S. Gray, 38 Flowergate, Whitby.
28	Sheffield—Painting, Decorating, &c.	Improvement Committee	C. F. Wike, City Surveyor, Town Hall, Sheffield.
28	London, W.—Oils, Paint, &c.	Paddington Borough Council	Borough Surveyor, Town Hall Paddington, W.
rch 2	London, S.E.—Paints, Oils, &c.	Bermondsey Borough Council	F. Ryall, Town Clerk, Town Hall, Bermondsey.
2	Manchester—Oils, Paints, Brushes, &c.	Rivers Committee	Secretary, Rivers Department, Town Hall, Manchester.
3	London, S.E.—Oils, Paints, Colours, &c.	Deptford Borough Council	V. Orchard, 20 Tanner's Hill, Deptford, S.E.
3	Derby—Paints, Oils, &c.	Town Council	J. Ward, Borough Surv., Municipal Offices, Babington Lane Derby.
4	York—Painting Station Buildings	North-Eastern Railway Co.	O. A. Harrison, Engineer, Central Station, Newcastle-upon-Tyne.
4	London, S.E.—Oils, Colours, &c.	Southwark Borough Council	Vestry Hall, 81 Borough Road, S.E.
4	Canterbury—Painting, &c., at Sanatorium		A. C. Turley, City Surveyor, Canterbury.
	ROADS AND CARTAGE:		
b. 27	Glasgow—Road Metal	— —	J. Rennie, 3 Beechwood Terrace, Sandyhills, Shettleston.
27	Brighton—Wood Paving	Town Council	F. J. C. May, Borough Surveyor, Town Hall, Brighton.
27	Lesmahagow, Scotland—Laying-out Cemetery	Parish Council	Warren & Stuart, 74 Hope Street, Glasgow.
28	Shrewsbury—Haulage of Road Stone	County Council	A. T. Davis, County Surveyor, Shire Hall, Shrewsbury.
28	Lutterworth—Roadmaking, &c.	Earl of Denbigh	J. T. Franklin, Architect, Regent Street, Rugby.
28	Walton-on-Thames—Watering	Urban District Council	C. J. Jenkin, Surveyor, Council Offices, Walton-on-Thames.
28	London, W.—Works and Materials	Paddington Borough Council	Borough Surveyor, Town Hall, Paddington, W.
rch 2	Wolverhampton—Stores	Corporation	G. Green, Borough Surveyor, Town Hall, Wolverhampton.
2	York—Meterials	Corporation	A. Creer, City Engineer, Guildhall, York.
2	Hastings—Granite	Corporation	P. H. Palmer, Borough Engineer, Town Hall, Hastings.
2	Bolton—Materials, &c.	Streets Committee	E. Ll. Morgan, Borough Surveyor, Town Hall, Bolton.
2	Bury, Lancs—Materials	Sewering, Paving & Streets Com.	A. W. Bradley, Borough Engineer, Corpn. Offices, Bank St., Bury.
2	London, S.E.—Materials	Bermondsey Borough Council	F. Ryall, Town Clerk, Town Hall, Bermondsey, S.E.
2	Southend-on-Sea—Materials	Corporation	E. J. Elford, Borough Surveyor, Clarence Road, Southend.
2	Whitehaven—Materials	Town Council	Borough Surveyor, Town Hall, Whitehaven.
2	Bolton-upon-Dearne, Yorks—Materials, &c.	Urban District Council	J. L. Hawksworth, Clerk, Council Offices, Bolton-upon-Dearne.
2	Heaton Norris, Materials, &c.	Urban District Council	W. Hodson, Clerk, Council Offices, Heaton Moor.
2	Thames Ditton—Road Materials, &c.	Esher and Ditton U.D.C.	A. J. Henderson, Surveyor, Cauncil Offices, Thames Ditton.
3	London, S.E.—Materials	Deptford Borough Council	V. Orchard, 20 Tanner's Hill, Deptford.
3	London, S.W.—Cartage of Granite	Middlesex County Council	H. T. Wakelam, County Surv., Middlesex Guildhall, Westminster.
3	London, S.W.—Materials	Middlesex County Council	H. T. Wakelam, County Surv., Middlesex Guildhall, Westminster.
3	Tynemouth—Footpaths	Corporation	J. F. Smillie, Borough Surveyor, Tynemouth.
3	Derby—Materials, &c.	Town Council	J. Ward, Borough Surveyor, Mun. Offices, Babington Lane, Derby.
3	Thorne, Yarks—Granite Dross, &c.	Rural District Council	Clerk, Council Offices, Plantation Road, Thorne.
3	Tynemouth—Excavating, Paving, &c.	Corporation	J. F. Smillie, Borough Surveyor, Tynemouth.
3	Bath—Works and Materials	Urban Sanitary Authority	C. R. Fortune, City Surveyor, Guildhall, Bath.
4	Croydon—Materials, &c.	Rural District Council	Surveyor, Town Hall, Croydon.
4	Northampton Materials	Rural District Council	W. Tomalin, 14 Guildhall Road, Northampton.
4	Ponteland, Northumberland—Materials	Castlewood R.D.C.	D. Hope, Surveyor, Ponteland.
4	London, S.E.—Materials	Southwark Borough Council	Vestry Hall, 81 Borough Road, S.E.
	SANITARY:		
26	London, N.—Disinfectants, &c.	Islington Borough Council	W. F. Dewey, Town Clerk, Town Hall, Upper Street, N.
26	Litherland, Lancs—Removal of Nightsoil	Urban District Council	A. H. Carter, 25 Sefton Road, Litherland.
26	Oldbury—Sewers Re-construction	Urban District Council	J. T. Eayrs, 32 Corporation Street, Birmingham.
26	Haworth, Yorks—Lime	Urban District Council	W. Robertshaw, Clerk, North Street, Keighley.
26	Ashford, Middlesex—Earth Closets	West London School District Managers.	Superintendent, Manger's Schools, Ashford.
27	Chelmsford—Scavenging	Rural District Council	W. Edser, Sanitary Inspec., Avenue Chbrs. Market Rd., Chelmsford.
27	Rotherham—Sewers, &c.	Sewage Works Committee	R. E. W. Berrington, Engineer, Bank Buildings, Wolverhampton.
27	Clitheroe, Lancs—Pipes, Disinfectants, &c.	Corporation	Borough Surveyor, Clitheroe.
28	Dublin—Lime	———	Commandant, Royal Irish Constabulary Depôt, Phœnix Pk, Dublin
28	London, W—Sewers Jobbing Works, &c.	Paddington Borough Council	Borough Surveyor, Town Hall, Paddington, W.
28	Chesterton, Cambs—Removal of Refuse	Urban District Council	J. D. Bland, Surveyor, Council Offices, Chesterton.
28	Coulsdon, Surrey—Scavenging	Croydon R.D.C.	Surveyor, Rural District Council Offices, Town Hall, Croydon.
28	Merton, Surrey—Scavenging, &c.	Croydon R.D.C.	Surveyor, Rural District Council Offices, Town Hall, Croydon.
28	Wallington, near Croydon—Scavenging	Croydon R.D.C.	Surveyor, Rural District Council Offices, Town Hall, Croydon.
28	Radcliffe, Lancs—Sewer	Urban District Council	W. L. Rothwell, Engineer, Council Offices, Radcliffe.
rch 2	York—Pipe, Sludge Press Cloth, &c.	Corporation	A. Creer City Engineer, Guildhall, York.
2	West Molesey—Sewers, &c.	Urban District Council	J. Stevenson, Engineer, District Council Offices, East Molesey.
2	Wolverhampton—Pipes, Gulleys, Lime, &c.	Corporation	G Green, Borough Engineer, Town Hall, Wolverhampton.
2	London, W.—Clinkers for Filter Beds	Hanwell District Council	S. W. Barnes, Surv., Council Offices, Church Rd., West Hanwell.
2	Manchester—Lime, &c.	Rivers Committee	Secretary, Rivers Department, Town Hall, Manchester.
2	Bury, Lancs—Sanitary Tubes, &c.	Corporation	A. W. Bradley, Borough Engineer, Cor. Offices, Bank St., Bury.
2	London, S.E.—Pipes, Lime, Disinfectants, &c.	Bermondsey Borough Council	F. Ryall, Town Clerk, Town Hall, Bermondsey.
2	Southend-on-Sea—Pipes, Lime, Disinfectants, &c.	Corporation	E. J Elford, Borough Surveyor, Clarence Road, Southend.
2	Whitehaven—Pipes, Disinfectants, &c.	Town Council	Borough Surveyor, Town Hall, Whitehaven.
3	London, S.E.—Sewer Entries, Stoneware Goods, &c.	Deptford Borough Council	V. Orchard, 20 Tanner's Hill, Deptford, S.E.
3	Derby—Disinfectants, Earthenware, &c.	Town Council	J. Ward, Borough Surv., Municipal Offices, Babington Lane, Derby.
4	London, S.E.—Pipes, Disinfectants, Lime, &c.	Southwark Borough Council	Vestry Hall, 81 Borough Road, S.E.
	TIMBER:		
26	Croydon—Fencing	Town Council	Borough Engineer, Town Hall, Croydon.
26	London, N.—Timber, &c.	Islington Borough Council	W. F. Dewey, Town Clerk, Town Hall, Upper Street, N.
28	London, W.—Timber	Paddington Borough Council	Borough Surveyor, Town Hall, Paddington, W.
rch 2	Bury, Lancs—Timber	Corporation	A. W. Bradley, Borough Engineer, Cor Offices, Bank St., Bury.
2	London, S.E.—Hardwood Paving Blocks, Timber, &c.	Bermondsey Borough Council	F. Ryall, Town Clerk, Town Hall, Bermondsey.
3	Derby—Timber	Town Council	J. Ward, Borough Surv., Municipal Offices, Babington Lane Derby.
4	London, S.E.—English and Foreign Timber	Southwark Borough Council	Vestry Hall, 81 Borough Road, S.E.
5	Swindon—Timber	Corporation	H. J. Hamp, Borough Surveyor, Town Hall, Swindon.
6	Egremont, Cheshire—Timber	Wallasey U.D.C	W. H. Travers, District Engineer, Public Offices, Egremont.
9	Madrid—Telegraph Poles	———	Direction General de Correos y Telégrafos, Madrid.
11	South Shields—Timber	Corporation	S. E. Burgess, Borough Engineer, Chapter Row, South Shields.

List of Competitions Open.

ATE OF LIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
28	Chorley—Shepherd's Hall	£10.	———	J. Billinge, 100 Pall Mall, Chorley
28	Drogheda—Public Library	£20, £15.	———	J. B. Connolly, Town Clerk, Drogheda.
28	Bridgwater—Appliances for Silt Disposal	———	£2 2s.	W. T. Baker, Town Clerk, King Square, Bridgwater.
27	Ynysmudw, Wales—Infant School	£10.	———	W. L. Evans, Clerk, Llangwicke School Board, Gwauncaegurwen, R.S.O
28	Cape Town—University Buildings	£400, £200, £100.	———	Agent-General for the Cape of Good Hope, London.
rch 2	Whitley Bay—Board Schools	———	———	J. W. Mitchell, Clerk, Whitley and Monkseaton School Board, Council Buildings, Whitley Bay, R.S.O.
4	Chepping Wycombe—Town Hall, &c.	£105 and £26 5s.	———	T. J. Rushbrooke, 77 Easton Street, Wycombe.
15	Hull—Soldiers' Memorial	———	———	E. Laverack, Town Clerk, Town Hall, Hull.
31	Hull—Extension of Town Hall	£300, £200, £100.	£5.	E. Laverack, Town Clerk, Town Hall, Hull.
31	Castleford, Yorkshire—Public Library	£15, £10.	———	H. A. Broadbent, Clerk to Urban District Council, Castleford, Yorkshire.
31	Chelmsford—Infectious Diseases Hospital	£25, £10.	£1.	A. S. Duffield, 96 High Street, Chelmsford.
il 10	Yeovil—Laying-out Land for Town Hall, Municipal Buildings, Markets, &c.	£21, £10 10s.	———	Borough Surveyor, Yeovil.
14	Blackpool—Technical Schools	£60, £25, £ 5.	£1 1s.	J. S. Brodie, Borough Surveyor, Town Hall, Blackpool.
30	Fenton, Staffs—Library	£60, £30.	£1 1s.	S. A. Goodall, Surveyor, Town Hall, Fenton, Staffs.
30	Sunderland—Alterations to Hall	£100, £50, £25.	£ .	J. W. Moncur, Borough Engineer, Town Hall, Sunderland.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

Birtley (near Newcastle-on-Tyne).—For the construction of a new line of inclined railway at Birtley, near Newcastle-on-Tyne, with the necessary embankments, cuttings and masonry for retaining walls, and two bridges, and a series of coal depôts, for the Birtley Iron Co. Mr. J. E. Parker, A.M.I C.E., engineer, Post Office Chambers, Newcastle-on-Tyne:—

G. Bell, South Shields	£16,592	18	10
J. E. Middlemas, Newcastle	16,580	0	0
G. E. Simpson, Newcastle	12,836	15	3
W. Dixon, Bradford	11,780	0	0
R. Hudson, Sunderland	11,710	0	0
B. Firth, York	11,354	0	0
R. Blackett & Sons, Darlington ..	11,150	0	0
Low & Thomas, Wakefield	10,863	16	1
S. Miller, Newcastle	9,785	18	0
C. Bushby & Sons,* Preston Leyburn	8,663	1	10
Hardy & Atkinson, Hartlepool ..	—		
W. & J. Lacey, Darlington	—		

* Accepted.

Brighton.—For the supply, delivery and erection complete of the overhead trolley construction and equipment for the tramways in Old Steine, London Road, &c., Brighton, for the Town Council:—

G. Hill & Co., Cornbrook, Manchester	£2,074	19	4
R. W. Blackwell & Co., Ltd.	1,861	11	11
J. G. White & Co., Ltd.	1,677	12	2
Lowdon Brothers & Co., Dundee ..	1,579	8	3
British Thomson-Houston Co., Rugby	1,557	7	0
Estler Brothers	1,493	15	2
M. A. Shepstone & Co. (A)	1,426	12	3
M. A. Shepstone & Co. (B)	1,329	3	0
W. T. Henley's Telegraph Works Co., Ltd.	1,316	14	1
British Electric Equipment Co.,* 101, Leadenhall Street, E.C.	1,224	6	6

* Accepted.

Bristol.—For the erection of a group of homes, hall, &c., Downend, for the Guardians. Messrs. La Trobe & Western, architects, 20, Clare Street, Bristol:—

Browning	£20,438
Beaven	20,280
Wilkins & Son	19,439
A. E. Longden	19,411
Stephens, Bastow & Co., Ltd.	18,987
R. F. Ridd	18,763
E. Clark	18,740
Downs & Son*	17,600

* Accepted. [All of Bristol.]

Burton Latimer (Northants).—For sinking a well and driving headings near Burton Latimer, in the county of Northampton, for the Kettering Rural District Council. Mr. J. B. Everard, M.I.C.E., engineer, 6, Millstone Lane, Leicester:—

E. Timmins & Sons, Ltd., Runcorn.	£3,732	7	2
J. H. Dawson, Burnley, Lancs ..	2,516	9	0
Siddons & Freeman, Oundle . ..	2,416	0	0
Bentley & Loch, Leicester	1,824	11	0
C. Chamberlain,* Leicester	1,650	3	0

* Accepted.

Christchurch (Hants).—For the erection of additions to town hall buildings and technical school. Mr. Edward J. Legg, borough surveyor:—

Jenkins & Sons, Ltd., Bournemouth	£1,885
W. Hoare, Bournemouth	1,791
Jones & Seward, Bournemouth	1,645
T. Tiller, Christchurch	1,565
F. Jenkins,* Christchurch	1,410

* Accepted.

Harwich.—For construction of about 500 lineal yards of concrete sewer, for the Town Council. Mr. Henry Ditcham, borough surveyor:—

E. E. Newton, Harwich	£2,619
G. S. Horton, Felixstowe	2,6[illegible]0
Wilson, Border & Co., Ilford	2,558
G. Burgoyne, Ipswich	2,490
Bradshaw & Co.,* Queen Victoria Street, London	2,406

* Recommended for acceptance.
[Surveyor's estimate, £2,409.]

Ilkeston.—For the erection of a public free library at Ilkeston for the Corporation. Messrs. Hunter & Woodhouse, Belper, architects. Quantities by the architects:—

Perks & Sons, Long Eaton	£7,644
Pegg & Bailey, Derby	7,6[illegible]8
Walker & Slater, Derby	7,400
A. E. Smith, Nottingham	7,248
Smith & Sons, Ashbourne	7,133
Donnelly & Sons, Kimberley	7,044
W. P. Ireson, Ilkeston	£7,025
H. Herbert & Sons, Leicester	6,945
Wagg & Sons, Derby	6,[illegible]18
W. Moss & Sons, Ltd., Loughborough ..	6,890
Pask & Thorp, Nottingham	6,846
A. Earnshaw, Ilkeston	6,840
J. H. Williamson & Co., Nottingham	6,799
Ford & Co., Derby	6,782
A. Summerfield, Derby	6,770
J. G. Thomas, Nottingham	6,733
J. & J. Warner, Mickleover	6,551
Wheeldon Brothers, Belper	6,490
Vickers & Sons, Nottingham	6,420
J. Cooper & Sons, Ltd., Nottingham	6,350
T. Barlow,* Beauvale Road, Nottingham .	6,310

* Accepted.

Ipswich.—For the following work, for the Corporati (Specification No. 11) river work, intake chambers, c iron wells, pipes, valves, strainers, &c, for condens water supply:—

J. Shilleto & Son, Bury St. Edmunds	£6,965	10	0
Sir Hiram Maxim Electrical and Engineering Co., London	6,602	15	7
S. Russell & Sons, Leicester	6,516	7	0
Fraser & Fraser, London	5,970	15	0
S. A. Kenney, Ipswich	5,902	0	0
G. Double,* Ipswich	3,945	19	0

* Accepted.

London, S.E.—For alterations and additions to United Friends beer-house, Wellington Street, Deptfo for Mr. C. Conlay. Mr. John James Downes, archite 199 Lewisham High Road, S.E.:—

W. Martin	£1,460
Hall Brothers	1,390
S. R. Best	1,285
W. O. Collingwood,* Brockley	1,140

* Accepted.

Continued on p. xvi.

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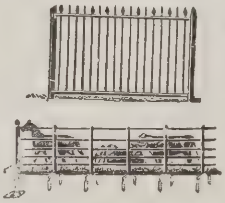

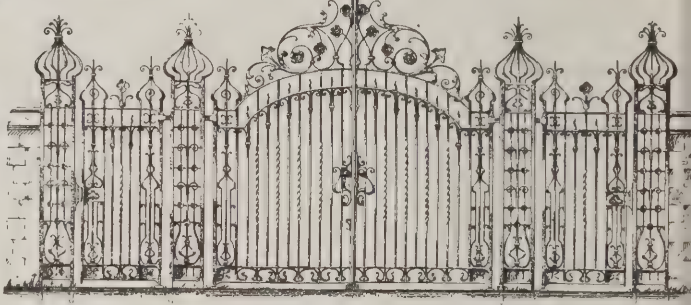

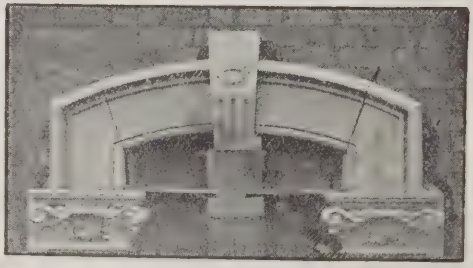

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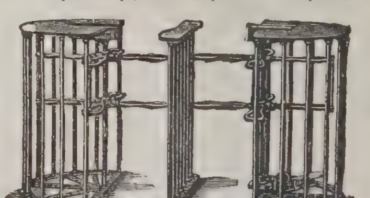

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TENDERS—*cont.*

London, S.E.—For the Grove Vale housing scheme, for the Camberwell Borough Council. Mr. W. Oxtoby, borough surveyor:—

R. & E. Evans, Peckham, S.E.	£71,680	0	0
Treasure & Son, Holloway, N.	65.047	0	0
W. King & Son, London	64,942	0	0
J. O. Richardson, Peckham	64,572	9	0
F. & H. F. Higgs, Loughborough Junction	64,500	0	0
J. Ham, Denmark Hill, S.E.	64,010	0	0
J. Smith & Son, Ltd., South Norwood	63,925	0	0
Leslie & Co., Kensington Square, W.	63,600	0	0
H. Lovatt, West Kensington, W.	63,400	0	0
A. White & Co., Rotherhithe, S.E.	63,100	0	0
Hardy Brothers, Palmer's Green, N.	63,100	0	0
Balaam Brothers, Old Kent Road, S.E.	62,679	0	0
Sims & Wood, London, W.C.	62,666	0	0
W. Johnson, Limehouse	62,475	0	0
Holliday & Greenwood, Brixton, S.W.	62,050	0	0
Perry & Co., Bow, E.	61,114	0	0
F. G. Minter, Westminster, W.	60,379	0	0
Leather & Son, Wandsworth, S.W.	60,000	0	0
Courtney & Fairbairn, London	59,998	0	0
F. G. Wheeler, West Norwood, S.E.	59,995	0	0
W. E. Blake, Plymouth	59,708	0	0
G. Newton, London, S.E.	58,755	0	0
G. Parker, Peckham	58,535	0	0
G. J. Kick, Beckenham	58.200	0	0
C. Ansell, Lambeth	58,154	0	0
J. & E. Bowyer, Upper Norwood	57,900	0	0
J. Sheibourne & Co., London, E.C.	57,635	0	0
Myall & Upson, Clacton-on-Sea	57,066	0	0
W. Downs, Walworth	56,589	0	0
B. Jones & Son, Sutton, Surrey	56,124	0	0
H. L. Holloway, Deptford	55,983	0	0
A. T. Haines, West Ham	55,612	0	0
J. Barker & Co, Kensington, W.	55,585	0	0
Coles & Sons, Plymouth	45,608	8	1
W. Goddard, New Southgate	41,021	0	0
J. Frampton,* 32; Belvoir Road, Dulwich	41,000	0	0

[Borough engineer's estimate, £43,500.]

* Accepted.

London, S.W.—For the erection of bakery, shop and flat, 106 & 110 Brompton Road, S.W., for Messrs. Spiking & Co. Messrs. Blangy & Van Blaars, architects, 19 Old Square, Lincoln's Inn, W.C.:—

Estimate A.

T. Boyce	£8,783	0
Leslie & Co.	6,540	0
Lole & Lightfoot	6,144	0
Syme & Duncan	5.925	0
Langdale, Hallett & Co.	5,485	0
Turtle & Appleton*	4,920	0

Estimate B.

Langdale, Hallett & Co.	220	0
Syme & Duncan	150	0
Leslie & Co.	88	0
Lole & Lightfoot	75	0
Turtle & Appleton*	55	0

For building twelve ovens.

T. Smith & Sons	1,009 15

* Accepted.

Londonderry.—For the erection of a café at Victoria Market, for the Londonderry Temperance Council. Mr. M. A. Robinson, C.E., M.R.I.A.I., M.S.I., architect, Richmond Street, Londonderry:—

Shannon & Routledge	£1,487	10
A. Dunlop	1,448	0
M. Sweeney	1,364	0
R. Colhoun*	1,300	0

* Accepted.

Warwick.—Accepted for the erection of further farm buildings at Budbrooke House, near Warwick, for Mr. T. O. Lloyd. Mr. C. M. C. Armstrong, architect, 5 High Street, Warwick:—

J. H. Cashmore, Warwick	£277	6	3

West Ham.—For making up the following streets, for the West Ham Town Council: Queen's Road (part), Fife Road, Watford Road, Exeter Road, Brent Road, South Molten Road, Wellington Place. Mr. John G. Morley, borough engineer:—

D. H. Porter, Clapton Square, N.E.	£8,687	0	0
W. Griffiths & Co., Ltd., Bishopsgate Street, E.C.	7,774	15	10
J. Jackson, Plaistow	7,316	8	6
Parsons & Parsons, Ilford	7,170	16	10
Peters & Co., Stepney, E.	7,116	0	10
D. T. Jackson, Barking	6.710	4	11
T. Adams, Wood Green	6 572	2	1
W. Manders, Leyton, E.	6,431	0	0
G. J. Anderson,* 26 North Street, Poplar	5,762	7	2

* Accepted.

Winchester.—For the erection of a dwelling-house at St. Cross, Winchester. Messrs. Colson, Farrow & Nisbet, architects, 45 Jewry Street, Winchester:—

Chinchen, Bagshot	£3,604	7	10
Avery, Winchester	3,375	0	0
Whtte, Winchester	3.100	0	0
Franklin, Southampton	3,050	0	0
Rashley, Southampton	2,943	0	0
Jenkins, Southampton	2,934	0	0
Stevens, Southampton	2,924	0	0
Bascomb Winchester	2,829	0	0
Scammel, Swanmore	2,700	0	0
Golding & Ansell, Southampton	2,600	0	0
Coston & Co.,* 14 Millbrook Road, Southampton	2,586	0	0

* Accepted.

Woking.—For the erection of a gardener's cottage, St. Peter's Home. Messrs. Clare & Ross, architects, 1 West Street, Finsbury Circus, E.C., and Chelmsford. Quantities by the architects:—

W. & C. Brown, Wandsworth, S.W.	£580
R. Pain, Woking	512
Martin Wells & Co., Ltd., Aldershot	493
J. Harris & Son,* Woking	485

* Accepted.

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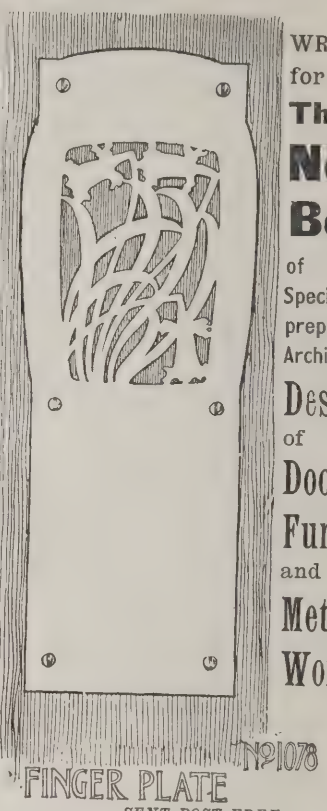

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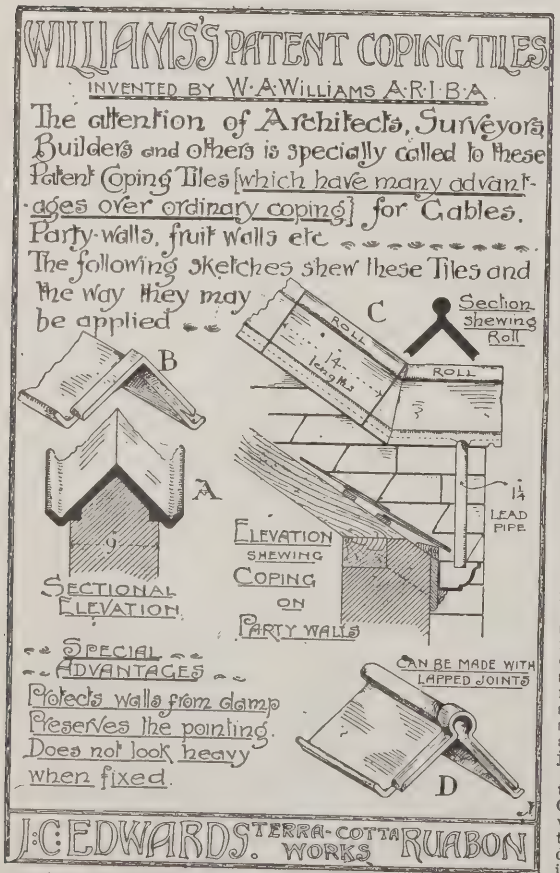
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The end tile is provided with outlets, from which the water can be conducted to the eaves gutter, or elsewhere by a small lead pipe, or the outlet holes can be omitted, the tile throated and set to let the water shoot clear of the building, but the pipe is recommended and the expense is trifling.

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THE

BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

March 4, 1903. Vol. 17, No. 421. 9, East Harding Street, E.C.

Cupboards. WE WERE much pleased to read the King's letter to the chairman of the London County Council in regard to the Millbank working-class dwellings. The Council's architects have done good work here, and we may be sure that Lord Knollys's letter was more than a formal recognition of the fact; more especially as his Majesty was an active member of the Royal Commission on the Housing of the Working Classes. But the point in the King's letter is, that a larger number of cupboards should be provided in dwellings of this class. His Majesty has there touched on a most important, though seemingly trifling, matter. While architects are minutely attentive to the administrative requirements of those who are engaged in public offices and other buildings, they very often forget that it is equally essential to consider a house from a woman's point of view. If they did they would provide a great many more cupboards. And these cupboards should not be a mere boarding-in of awkward corners—tiny boxes of little use—but well-arranged square-sided get-at-able cupboards capable of holding the innumerable little articles of the housewife. Such provision is particularly needed in working-class dwellings, and we trust that the King's letter may prove fruitful. It does not follow that all the carefully-designed plans of a tenement will be appreciated—cases are not infrequent of baths filled with the relics of the coster's barrow, and of air-gratings choked with rags—but cupboards are sure to be used, and though sometimes they might become the handy receptacle for rubbish, they would, as his Majesty says, help to prevent a litter in the rooms and so add to their tidiness.

The Advertising Architect. A CORRESPONDENT sends us some cuttings from the advertisement pages of a well-known American magazine which show the business architect at his best—or worst. "For a dime I will send one portfolio of ten plans and views of cosy homes," says one architect of St. Louis who designs artistic houses that make cosy homes; "and to show you my work will draw your own plan to scale, with pretty view of house for $1.00." Then there s a firm of architects who offer "two matchless books on house building." "Send us your ideas and $5.00," says another enterprising firm, "and we will make you a beautiful coloured sketch" (we know that sketch). "Think of it!"—yes, we think of it—"over 100 plans all costing to build the same amount, for $1.00: all practical as well as artistic." And yet we still hear that architects have no enterprise! Architecture an art, a profession or a trade? Why, here is the bed-rock of it all. Who wants a fine house, "all practical as well as artistic"? Turn up the page and there it is—the latest thing, most fashionable. There is no doubt about this being a dollar's worth of business—a good dollar's worth, with all the art thrown in: and why not? Nobody can mistake this: the mask is torn off. Architecture a trade, as plain as a pike-staff. Maybe 'tis only the incubation stage before the "combine." Yet we are glad those advertisements were American, not English.

Westminster (R.C.) Cathedral. A PARAGRAPH has been recently going the round of the newspapers to the effect that an anonymous donor has presented to Westminster Cathedral four baptismal fonts taken from churches in the neighbourhood of Venice. The statement is absurd on the face of it, as no Catholic Church, not even a cathedral, would indulge in the luxury of four baptismal fonts, one being considered sufficient for all purposes; besides, the Italian Government exercises such a control over the property of the Church as to make a transaction like this impossible. A reference to the handy little guide to Westminster Cathedral published by Messrs. Burns & Oates, price 6d., would have been sufficient to show the inaccuracy of the report. In the description of the baptistery on p. 46 we are told: "This, as will be seen from the plan, is situated right of the narthex on entering the cathedral. Herein will be placed the superb font of marble, in the Byzantine style, designed by Mr. John F. Bentley and executed in Rome. It is the munificent gift of Lady Loder, who is also one of the founders of the cathedral. In the deep niche of the baptistery will be placed a fine copy of Thorwaldsen's statue of St. John the Baptist, ordered by the late Marquis of Bute for this niche a few months before his lamented death. Lord Bute was one of the first founders of the cathedral and has left us for all time this most acceptable memento of his well-known devotion to St. John the Baptist, his own patron saint." Referring to this handbook, it will be as well in any future edition to correct an error on p. 61, where, in reference to the architect of the cathedral, it is stated that "the Society of Architects . . . have already recognised . . . his architectural genius." This is of course a mistake for the Royal Institute of British Architects, who conferred on Bentley the Royal Gold Medal, an honour he unhappily did not live to receive.

Three Bills. THE London Building Acts (Amendment) Bill and the Plumbers' Registration Bill were read a first time in the House of Commons last week. We publish in this issue the concluding part of our article dealing in detail with the former Bill, so that there is no need to enlarge on it here. We would observe, however, that while the object of the Council to secure powers over old buildings is undoubtedly a worthy one, the Bill is too drastic in its requirements; and with such widespread and powerful opposition as it receives from the City, we think it very unlikely that the measure will become law in its present form. The Plumbers' Registration Bill has, like the Architects' Registration Bill, been before Parliament for many years, though up to the present the efforts to get it through the House of Commons have not been successful. Yet it is a Bill that deserves support. Looking back on any movement which has been urged with great zeal—such, for instance, as the Gothic Revival—we may see how it went too far in parts and burnt itself out; but we do not think this will be the case with sanitary reform. The continued researches in microscopy and bacteriology show more and more clearly how essential it is that sanitation should be most thoroughly carried out; so that the plumbing of a house should not be left to anyone who liked to call himself a plumber. Of the Architects' Registration Bill we hear nothing from a parliamentary source. The Society of Architects has restarted its crusade and, as already announced in these columns, has circularized the profession; but we may be sure the Bill will never be passed until the Royal Institute gives its support. That support, formerly so frigidly withheld, appears now to be somewhat more feasible; and within the next few years we should not be surprised to see a Bill for architects' registration introduced by the Institute. Till then, the old arguments, pro and con, may be worn still more threadbare.

ST. MARK'S CAMPANILE.

ITS REBUILDING.

No longer overshadowed, dwarfed and debased by the ultra-predominant height, clumsy dimensions and ignoble materials of the enormous mass—which, so unlike Giotto's agile and graceful conception, stood isolated in the more modern square like some defiant costermonger in a drawing-room—the noble proportions of the contiguous Royal Palace at last appear in all their natural majesty. The wonderful front elevation of the Basilica, the one defect in which was its apparent want in height, no longer impresses the beholder with a fastidious sense of its squatness, no longer strikes him as somewhat trivial, but, freed from the unavoidable comparison with the towering mass that stood before it, now shines forth in augmented astonishing splendour.

Towers in olden times were the emblems and evidences of baronial power, of the territorial jurisdiction exercised by all feudal chiefs. A tower, therefore, and an imposing one, was indispensable in Sovereign Venice. And when it stood in perfect alignment with the other buildings which formed that side of the square, and the Basilica and the present Ducal Palace, then a grim fortress, were also plain edifices of red brick, it was in perfect keeping with its surroundings, and had every reason for existing where it was and as it was. But all that is now changed.

The old brick front of the Basilica has been superseded by a priceless one of resplendent imperishable mosaics and of precious variegated marbles, many of them relics of past civilisations, of bygone creeds, while the battlements and loopholed walls of the fortress, together with the moat that rendered the approach to them difficult, have all disappeared and been replaced by that ideal front in which Ruskin rejoiced, a most graceful reminiscence of pure Hindu, as the profane may see by examining the illustrations in Rousselet's magnificent work on India, executed by order of King Edward when Prince of Wales, on the occasion of his visit to that empire.

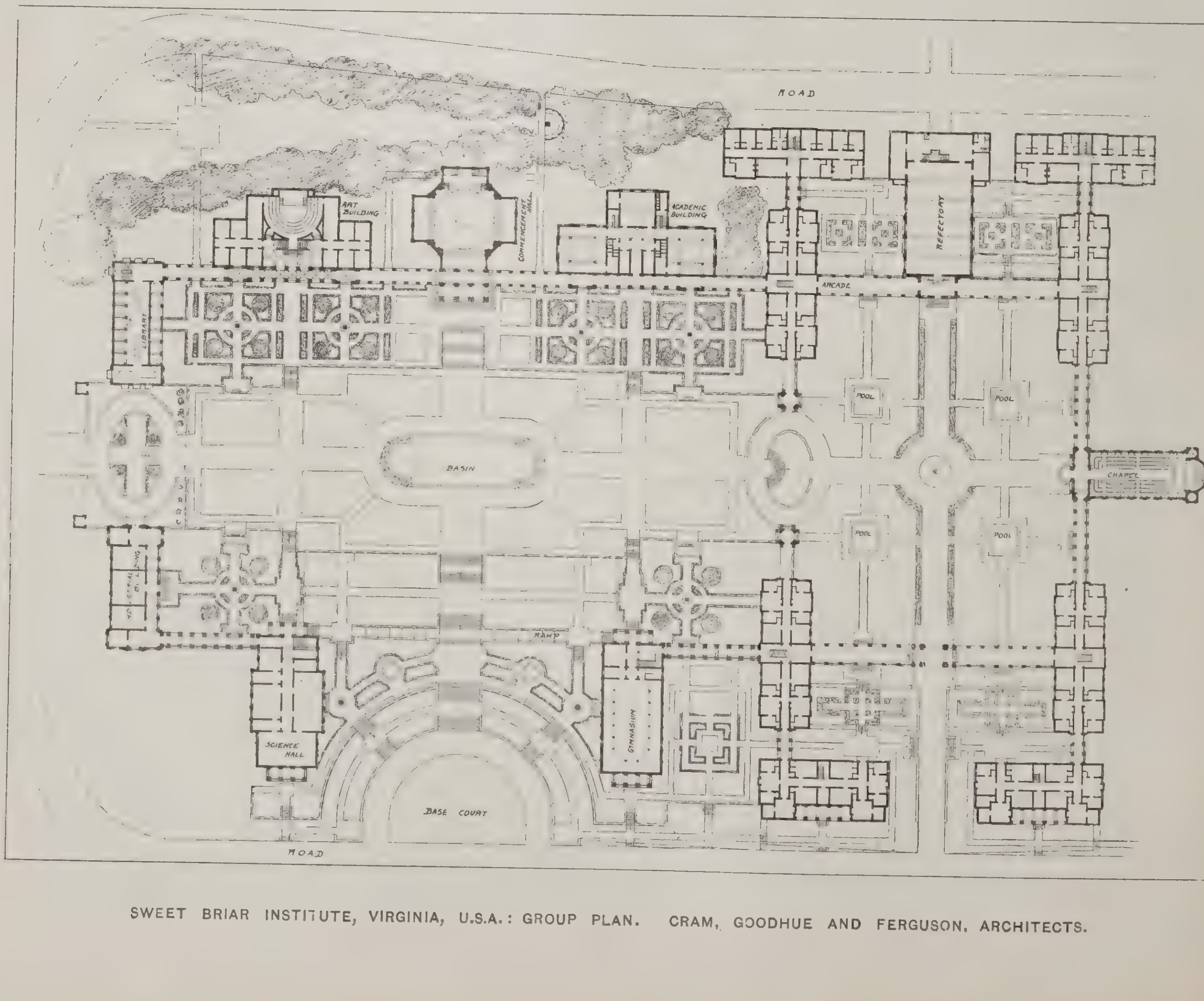
The view of those superb arcades now fortuitously opened from the Square after being long but hopelessly desired by many, adds a new æsthetic element of inestimable value to the general prospect, perfects an exquisite symphony of form and colour, and completes such a splendid comparative exposition of the fruits of the versatility and refinement of man's decorative architectural genius as is nowhere else to be seen.

And yet there are certain one-eyed fanatics, with minds fashioned in the Megatherium epoch, who would again mar this delightful prospect, this unique assemblage of elements so dissimilar and yet so harmonious, by the introduction, "where it was and as it was," of a fac-simile of that huge decrepit mass of brick which, oppressed and overcome by a mortifying sense of its own pitiable false position, of its utter incongruity amid its more modern surroundings, quietly and conscientiously collapsed in July last.

No one can have a more genuine and profound admiration and veneration than I for ancient monuments which silently but continually and majestically proclaim the sorrows and the glories of the great past in which they existed. But such monuments must be genuine, not counterfeits. . . .

No. If we are to have a new tower, let it be original. Let it symbolise the glory of young Italy. Let it proclaim the deeds accomplished by her in the history-making epoch in which it was built. Let it speak of the bright, hopeful, useful, progressive, aspiring Venice of to-day. In order to do so it must be characteristic, not of Gothic times, but of our own, lofty but not heavy; graceful, in as much decorative harmony as possible with the Basilica, and therefore, thanks to the united efforts of "Protos" and "Masters of Mosaic," joyously beautiful, bearing on its front, with conscious pride, the new, grand, peace- and prosperity-giving programme, the triumphant legend, "United Italy and Victor Emmanuel."

A final observation. The papers recently informed us that the delay in disencumbering the Square of the old stump is due to the fact that the material resulting from its final demolition is to be used in filling up the trenches which are being opened round its base in order to make a thorough examination of the subsoil; but they did not tell us what is intended to be done with the "deblai" from them. This omission reminds one of the gentleman who, having called his man, said, "John, dig a hole in the garden and bury all this rubbish!" "Yes, sir," said John, and away he went to execute the order. A few hours afterwards he returned to ask his master what he was to do with all the earth that had come out of the hole to make way for the rubbish. "Fool!" cried the impatient boss, "don't bother me; dig a hole big enough to put earth and rubbish and all in!" How John solved the problem history does not inform us; but we presume that clever Commendatore Boni knows the secret, and that unimpeded vision of the entire area of the matchless Square, and of the edifices surrounding it, will be available by the time the Fifth Biennial Exhibition of International Art is about to close.—(Extracts of a letter from a Venice correspondent of the "Daily Graphic.")



SWEET BRIAR INSTITUTE, VIRGINIA, U.S.A.: GROUP PLAN. CRAM, GOODHUE AND FERGUSON, ARCHITECTS.

SWEET BRIAR INSTITUTE, VIRGINIA.

WE reproduce this week several drawings of the Sweet Briar Institute which is now being erected in Virginia to shelter one of the largest schools for young ladies in the south of the United States. From the plan on the opposite page it will be seen that the buildings and grounds have been laid out in a masterly style. It will be noted that there is an arcaded rectangle enclosing the garden, around which the buildings are grouped. On either side of the fore-court to the left are the library and the industrial building; then, on what is presumably the north side, are successively the art building, commencement hall, academic building, dormitory, refectory, and dormitory. To the right, the chapel occupies the centre of one side, with two dormitories on the south side. Then come the gymnasium and science hall, admirably placed on either side of the base court. The plan is very skilfully treated, as one would expect of such well-known architects as Messrs. Cram, Goodhue & Ferguson, and we are glad to be able to lay it before our readers: for this, however, we are indebted to the "American Architect," from which we reproduce the accompanying illustrations and the bird's-eye view in the centre-plates.

SWEET BRIAR INSTITUTE, VIRGINIA: THE RAMP.

STAINED GLASS OF THE FUTURE.

By SILVESTER SPARROW.

(Concluded from p. 23, No. 420.)

HITHERTO windows have been a hopeless jumble of colours, everyone for itself and the Devil take the window. People seem to have started colouring a design at one end without having had the least idea what the other end would be like. Not that there is any restriction on colours so long as they are subordinated to the key colour. Indeed, let us have as much variety as possible, so long as the unity and harmony of the whole are not impaired. This variety will lead you into the most subtle effects which will always add charm to a work, and charm is a very essential quality. Strength and subtlety should be the character of the colour scheme; strength, of course, being derived from a bold treatment of the primaries. The primaries must be as rich and full as possible, and in bold masses, if your window is to have the necessary vigour and grip. So-called æsthetic colouring is unpardonable weakness in a stained-glass window.

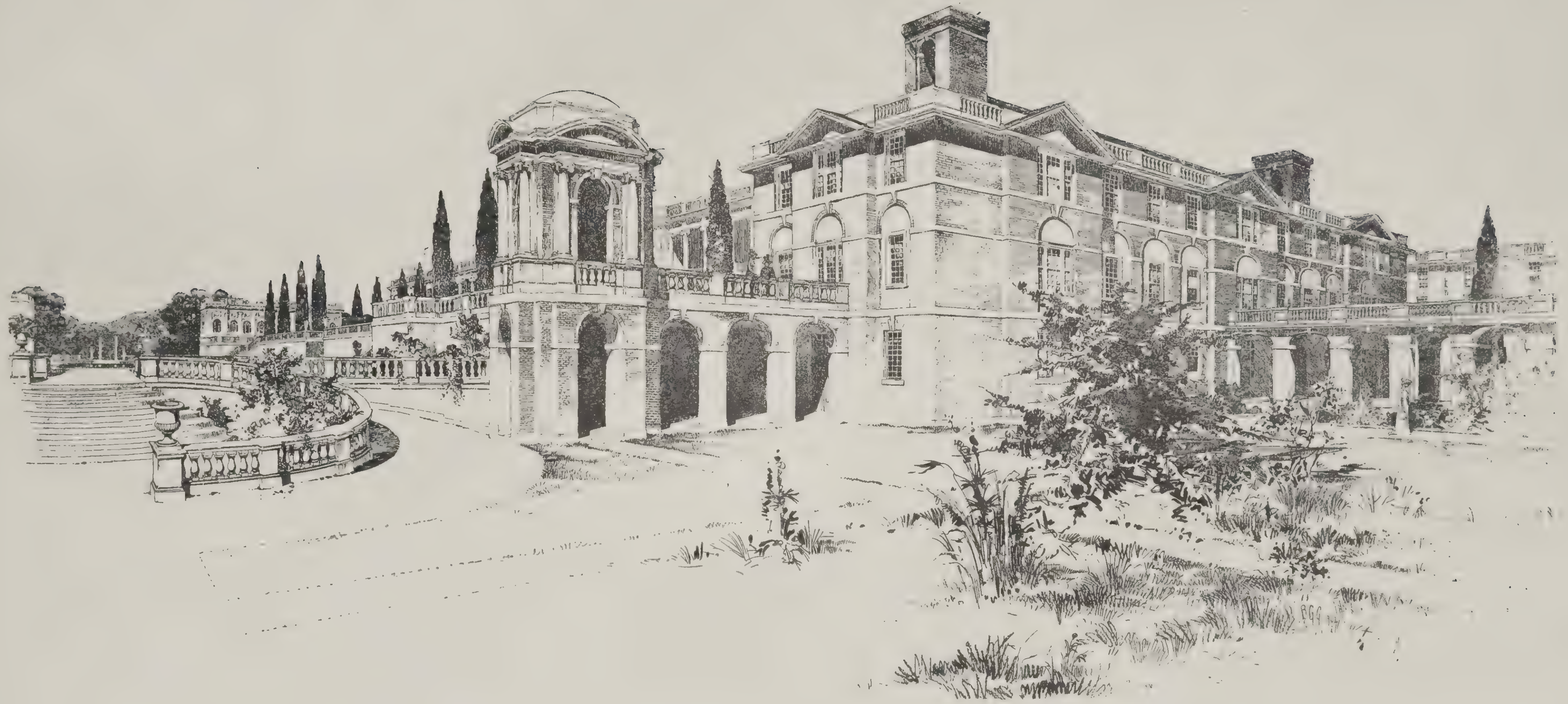
With regard to the treatment of a light window, that end is not to be attained by filling the window with light colours of the same value. That simply results in a washy window, which looks as if all the colour had been bleached out of it. No; use as much "tint" as you like, but there must be some rich colour to show that it is intentionally a light window. The same remark applies to an ornamental window in tints. There should be a little rich colour to give it grip, and a little pure white by which we may define the strength of the tint. Naturalistic colouring is not essential. Indeed, the most beautiful and glassy effects result from the unexpected. But it must have the appearance of inevitability; one must feel that to replace it with anything else would result in weakness—"and her hair shall be of what colour it please the glass-stainer." The traditional and symbolical colour of the draperies of Our Lord, the Blessed Virgin, the Apostles and others, together with their types, must be preserved (the colour scheme must be adapted to them and not the reverse); so that one may see at a glance who is being represented, or, should I say, one ought to be able to see. The church window is primarily to appeal to the eye of Faith, and one must not assume that the eye of Faith is practically non-existent, even though one have to explain to many a learned pastor (that is, shepherd) what would have been perfectly clear to the flock (that is, the sheep) of the Middle or so-called Dark Ages. This leads me to say that the symbolical is to be preferred to a literal treatment. At the same time, the symbolism is not to be a mechanical repetition of old forms, but a vivid personal insight into the heart of things. The lead scheme should be considered, as it emphasizes the rhythm of line and controls the masses of colour. Leads of various widths should be used in proportion to the size of the window. The lead is not to be considered simply for its use in holding the glass together, but as the most important factor in the design. It is the skeleton of the window. It is not unusual for firms to employ outside people to make designs who have no practical knowledge whatever, but who can turn out an attractive design or a pretty piece of colour calculated to deceive the unwary. These designs are to be known by the utter absence of any lead scheme, of the use of which the designer is profoundly ignorant. The result is that the window, usually carried out in the commonest glass, is not a bit like the design. There is one fatal error that must be avoided in putting in the lead lines. I allude to that pernicious practice of putting in curved lead lines when a round object like an arm, or a rounded fold of drapery, has to be cut on account of its length, or to obtain variety of colour. In the case of an arm the curved leads look like bracelets, and in long straight drapery folds the curved lead lines used in alternate folds give the drapery the appearance of corrugated iron. One must never forget that a window is a plane surface, and that round objects must be contradicted by straight leads. Before the cartoon can be made, sizes and templates of the window must be taken. The height from point to sill and the width, with laths. The templates are the shapes of the heads of lights from the spring line and of the tracery, cut out of brown paper. These will be sight size, to which about ⅜in. must be added all round to go into the groove. Is it necessary to say that a cartoon should be a fresh inspiration for every window? I am afraid it is, as some firms have no objection to using a cartoon a dozen times over. It

SWEET BRIAR INSTITUTE, VIRGINIA: THE LIBRARY FROM THE UPPER TERRACE.

would not be a bad plan for architects to insist on seeing the cartoons for every window they order. The cartoon should be made in sepia, as more nearly approaching the tracing and painting of the window, with the leads in black, and their proper widths. It should have a bold significant outline, even for the features, with a little shading, and not washy lines simply as a guide for the painter. The outline is a characteristic of stained-glass of any virile sort. The cutline from which the glass is cut and afterwards leaded on, must now be made from the cartoon. The cartoon is laid on a bench and semi-transparent ammunition paper laid over it. One then traces over the centre of the lead line with pencil, afterwards going over this with a brush in black ink. This gives one the heart of the lead—the skeleton of the window. Nearly every piece is now cut in sheet glass, to be used first as a "pounce" and afterwards to be painted on and fired. The exceptions are those pieces of "tint" or light colour that one can see the lines of the cutline through, and consequently can be cut from the cutline, and they will also be painted on. The method of using the "pounce" is to hold a sheet of coloured glass, which is generally varied in tone, up to the light, move the "pounce" over it until the exact place that you want cutting out has been found, then mark round it with a piece of French chalk. Hand this over to the cutter, who breathes on it and pounces round the shape with a pounce bag containing powdered whiting. Still holding the "pounce" firmly, he marks round it with a pointed piece of hard wood, and removing it its shape is found outlined on the coloured glass. The other use to which the sheet-glass is put, is to paint on it instead of the coloured glass. It is a rule that the better the glass, the less it will stand the fire. besides the general loss of brilliance, all streaks or other variations have a tendency to go darker. Gold ruby is an impossible colour to fire; besides the aforesaid loss it actually changes colour, becoming a hideous pink or magenta. Venetian opal, too, is an impossibility. No glass improves by going into the kiln, but sheet-glass suffers least, as it is harder than coloured glass generally is. In glazing, the coloured glass is kept in front of the painted piece, so that, besides preserving the paint from the action of the atmosphere, it has something of the effect of varnish on a picture, adding to the transparency of the shadows. We have now reached a most important section of the work: the selection of the glass. This I hold to be the artist's most individual task, which he cannot delegate to anyone. The usual way in firms is to have the different colours in numbered racks; then the master numbers the cutline, and the cutter goes to the corresponding rack, and chooses any sheet and part of a sheet he likes. What idea can the cutter have of the relation of each piece to the whole, or how one colour will affect another—a matter of the utmost difficulty in stained-glass? Colours and tones affect each other enormously, and demand the greatest care and experience. In selecting, every lead must be taken advantage of to vary the adjoining pieces. Of course the master makes alterations when the glass is on the easel being painted, or even after it is leaded up. One hears of quite heroic attempts in that direction—of one master who had a figure cut over three or four times before *he* was satisfied. It was very good of him to take so much trouble, but what bungling not to know what he wanted at first. How can that warmed-up colouring give one the exquisite thrill of the tingling grip of the artist's hand, where every piece, however varied or unexpected, seems inevitable? We will urge this reform in the interests of the masters themselves. We will tell them that in denying themselves the pleasure of selecting every piece of glass they miss the highest rapture in the production of a stained-glass window, even at the cost of a smaller output and consequent diminution of profits. We must save them from themselves. That pernicious method also favours a great fallacy—that the light and dark of a sheet of coloured glass should be utilized to give the light and shade of a drapery. *This* is to make a window pictorial, and leads to general flabbiness of colour. Now, the principle of colour in stained glass is contrast, one piece throwing up another. Only by this means can one display the jewel-like character of the material. This principle of contrast applies not only to the light and dark of a colour, but to a mixture of contrasting colours or tints, enhancing the beauty of one. Take a yellow drapery, for instance; there should be a dominant note of rich, pure yellow; then the colour branches out on each side, as it were—on the one side to the greens, and on the other to the reds. These are not to be gradual changes, but sudden contrasts—a greenish yellow against a reddish yellow, for instance—and there must be contrast in values as well. There is no end to the variety that may be imported into a colour so long as the impression of the one colour that has given the keynote remains. This method, besides preserving the essential glassiness of the material, gives a grip and subtlety to the colour which can never be attained by the light and dark of one colour. For the necessary breadth of effect large masses of colour with the utmost variety within each are essential. White draperies should be treated in the same way, a mixture of warm and cold tints, the warm or cold predominating as is found necessary. For flesh I use various tints, in accordance with the character represented or the colour or tone required. There is absolutely no restriction with regard to the colour of flesh (which, of course, must be in the glass and not painted on) so long as it harmonizes with the scheme of colour. Another very important point to be considered while selecting, and which has never hitherto been thought of, is that of *timbre*. That is to say, brilliant objects should be cut out of brilliant glass, dull and solid objects out of duller, more opaque glass, that would suggest solidity without having recourse to paint, so that even the deepest tones of a window may preserve their translucency. The various materials must be regarded as the instruments of the orchestra, each of which has its individual tone colour, or *timbre*: thus there is the brilliant sharp colour that would bring out a melody like the oboe; then the more mellow but still rich colour that would suggest the violins; then the material of such tone and texture, suitable for background purposes, that would suggest the lower strings and drums; again, a rich Early English gold ruby that would suggest the thrilling tones of the trumpet. All these should be welded together, in like manner, to produce the effect of a rich, mellow and powerful symphony.

The glass is cut with a diamond or a hard steel revolving wheel, assisted with pliers to groze or trim the glass to shape. Glass varies considerably with regard to the ease or difficulty with which it may be cut; but it is a rule that the better the glass the more difficult it is to cut. Think of cutting glass half an inch or more thick to a shape: in such cases even pincers have to be brought into use. I believe one reason why Powell's glass is not more used is that it is not so much annealed as other makes of "Antique." It is consequently more brittle, and can be cut with less certainty. Thus, to the greater cost of the best material must be added the greater cost of cutting and the waste in broken pieces; to which add the cutting of sheet and the extra pieces of colour for plating.

We have now reached the painting stage. The first step is to trace the outlines of flesh and drapery, of course, in a vitreous colour (namely, oxide of iron), ground in water, and fattened or made workable with treacle. Lay the cartoon on the bench, and you will be able to see the lines of it through the flesh tints, the light colours and the sheet-glass which you are going to paint on. When traced the glass is given a comparatively light or tacking fire. We now require a large piece of plate-glass, to be used as an easel glass, to which the glass that has to be painted is affixed with a mixture of beeswax and resin, made hot. The coloured glass may also be added, and as this is the first time we have seen all the colour together alterations can be made in it at this stage, if necessary. The colours used for painting are of an umber or earthern sort, though the oxide of iron can be added to give body. It must be remembered that the colours of the window are in the glass, and that the colours for painting are simply different degrees of warm and cold shade tints. A window is usually painted in one colour throughout, but that need not necessarily be so. The tone of colour can be adapted to different objects. For instance, a cold white can be painted in a cooler tone, and in some cases a pure black can be used. The colour, which is again prepared in water, but with gum as the medium, is laid all over the glass in a flat matt, which, while moist, is stippled with a tool called a badger. This stippling gives a granulated surface which helps the



SWEET BRIAR INSTITUTE, VIRGINIA, U.S.A.: THE GREAT COURT FROM THE RESIDENTIAL QUADRANGLE. CRAM, GOODHUE AND FERGUSON, ARCHITECTS.

texture wonderfully. When dry, the colour is gently loosened with the finger where the lights should come, and dusted off with a soft brush. As much as possible should be done with the finger: it gives more character and better texture. This process of modelling the lights is continued with hog-hair brushes and a quill to take out the high lights; the flat tone should be left for the half-tones and shadows. When fired and stuck up again, the shadows are strengthened with oil colour; the same colour prepared with turpentine, and fat oil of turps as the medium. Especially is this necessary in the flesh, to give character and expression. The dry surface of the glass is first washed over with oil of tar to let the colour flow freely. It is not essential that every piece of glass should be painted. On the contrary, if there is sufficient tone in the glass it is better not to paint, but to let the varied markings and tone of the glass speak for themselves. The shadows will then possess more translucency than if painted. Light glass heavily painted is much more obstructive to light than richly-coloured glass but slightly painted. I cannot leave the subject of painting without alluding to a kind of painting that is no painting. I mean "backing," as it is called. This is to lay a matt of colour on the back of the glass and then partially remove it, for no other purpose than to make the glass look dirty and old—to give it, in fact, that tone which the glass itself lacks. From the assiduous way in which some firms plaster the back of their windows with colour, anyone would think that the chief attraction of the old glass was derived from the accumulated dust of ages.

The parts that require it are now stained. Although this is called stained glass, and we used to be called glass-stainers (we are all artists in stained glass now), there is only one stain—a preparation of pure silver, which stains the whites yellow. It is mixed with yellow lake to reduce its strength; and this, being a vegetable colour, burns away.

When fired again, the glass is now ready to be put together by the glazier. As already remarked, it has been usual to regard the lead as simply a means of holding the glass together; consequently, to employ an insignificant lead throughout. But if we regard the lead as an important factor in the design, we must use leads of various widths and of a bolder character. The proportions of the lead must be adapted to the size of the window and its distance from the spectator. That must be a very small window where ½in. is too large for the principal lead. In large windows a ¾in. may be the principal lead; and if the window is going a great height, 1in. or more will not be too much. There must be no idea of shuffling the lead out of sight. To hide the lead and use as little of it as possible is a characteristic of the pictorial window. A window can hardly be described as pictorial where the lead is a prominent feature. Where leads of different widths are used it is necessary to mark the outline with different coloured chalks—say a blue for the ¾in. lead, a red for the ½in., while the black ink remains for the ⅜in. lead. The leading recalls a danger to be avoided in designing—not to make every piece of glass of so near a size that at the proper distance one seems to see the glass through a wire trellising. This is a danger the mosaic dispensers are apt to fall into. The leading of the double glass, and of the thick and varied pieces, offers difficulties. Leading becomes an art. One has to use a very broad-hearted lead, but sometimes that is not sufficient: in some cases one has to make a still broader heart by cutting the leaf off two calms of lead, and soldering the two hearts together, or by paring the leaf away to let the glass into the heart and then soldering a fresh leaf over it. Thus you see another process that is considerably extended by our determination to use the best material. The lead is then soldered at the joints, and the panel is handed over to the cementer. It would be more correct to say the puttier. Whereas in ordinary work of single glass the leads are filled with cement (a thick paint which ought to be composed of whiting, linseed oil, white or red lead, dryers, and lampblack to make it a lead colour), in this sort of work every piece of glass must be puttied on both sides. Copper ties are now soldered to the lead to twist round the bars, and the window is ready for fixing.

Now that I have reached the last stage of my discourse, that section which is to deal with the stained-glass of the future, I am confronted by the hateful task of having to say something about my own work. It is unfortunately necessary, because I have to show that the ideas I am about to put before you are not mere impracticable theories, but the result of working in the best material. Just as Wagner, when writing his theoretic works, deduced examples from his earlier operas, (the spontaneous outcome of his artistic need, thus proving that they were not the result of any preconceived theories), so I must describe to you my first excursion into the unknown land, the land of mystery, of light and tone. The window I am about to speak of was executed some few years ago for a lady who suggested the subject, "Wotan calling up Erda," from the third act of Wagner's "Siegfried." I must confess that at that time the subject seemed an impossible one for stained-glass, and perhaps you will agree with me when I quote the stage directions. "A wild region at the foot of a rocky mountain which rises L steeply. Night. A storm rages. Lightning and thunder, which last then ceases, while for some time lightning continues to flash through the clouds. Here the Wanderer enters. He strides with resolution to the mouth of a vault-like cavern in the rocks at front, and there stands, leaning on his spear, while he directs his invocation towards the cave. A bluish light glows in the rocky chasm. Illumined by this, Erda very gradually rises from the depth. She appears covered with hoar-frost; her hair and swathings emit a glittering light." Now, the *crux* of the whole thing was the supernatural light in which Erda appears, and I must say that I was very fortunate in finding at that time some Early English, which I tempered with Powell's blue on Venetian opal, that realised the effect perfectly. To my surprise, therefore, instead of this subject being impossible in stained glass, it became clear to me that this was precisely the medium in which effects of light were possible and could best be realised. I found there were possibilities in the best material which had never been dreamt of. Besides the supernatural light and the hoar-frost on the hair and swathings of Erda, it was possible to suggest the tone of night with the glass alone; the vigorous action of Wotan, with his cloak and "beard blown by the night wind," contrasted with the mystical stillness of Erda; also the flash of red in the sky suggesting the subsiding storm. Pictorial, you will say? Not at all. A pictorial window would have been a representation of the scene as it takes place on the stage. But this is an independent conception, conceived in the terms of the material, and producing a result which could not be attained by any other medium. Let us be quite clear on this point. A stained-glass window becomes pictorial when it does such things, or in such a manner, as can be done as well or better in another medium, *e.g.*, in a picture or wall-painting. It follows from this that there is a class of subject which is peculiarly the province of stained glass; that is, the supernatural, in which mystery is the most vital element, and in producing which, effects of light—with which in stained glass we are dealing directly—are the chief factors. I will just summarise the ideas I have gained by carrying out that "impossible" subject. That the subject of a window should be supernatural and symbolical. That mystery is the highest and indispensable quality. That to produce that, effects of light and tone are the chief elements. That there must be a definite tone-colour, and keynote of colour. The tracing and painting must be bold and expressive, wherever it is needed; but, as far as possible, the glass must be left to speak for itself; and the leading must emphasize the important lines of the design. Why should stained glass alone stand still and stagnate? Change is the law of progress, no less in art than in human society. Away with the imitation that paralyses the imagination, and let us bring whole hearts to the study of the best material and the natural development of early work, when, as I imagine, there was only one kind of glass—the best the people could make. What, then, is this natural development of early work which I venture to call "The Stained-glass of the Future"? And why is our development to spring from early work, and not from fifteenth-century and later work? Because the latter was no intrinsic development of the former, but simply a repetition in a more elaborate and ornate form. It is still a window of single figures or small subjects connected with canopies; consequently it leads to an *impasse*, a *cul-de-sac;* there is no development possible on those lines, so it *must* be ignored.

And now to the development ahead of stained glass. In the first place, I should regard it as a development that in an age of commercial production we consciously choose the best material. Another very important development would be that of regarding a window as a whole—one window, one subject—and not a series of small windows, as the single figures connected by canopies suggest. It must be distinctly understood that my desire to treat a window as a whole is not due to any impatience of the shafts dividing the window into lights; but to focus the attention on one subject, instead of frittering it away on a number of single figures or small subjects. The shafts, therefore, must not be ignored, but clung to as the ivy clings to the oak. Broadly speaking, the linear design, if a window is to have its due monumental character, should be more or less perpendicular, following the lines of the shafts. Impersonal objects, such as angels' wings, trees, clouds, drapery, the lines of the landscape, may run through two or more lights, to help in binding the window together; but the human figure should very rarely extend beyond its own light. The colour design, however, should be horizontal—in strata, as it were. That is to say, the strong colours should be concentrated on the base of the window, as in a musical composition the base is the most important thing; in the middle more neutral tones can be used; and in the upper part lighter and more ethereal tones, thus carrying the subject away into boundless space. The canopy must go, since it is no longer required to divide a window into sections, and as its lightness interferes with the tone of the window. You will see from this set of designs the difficulties one has to contend with in fitting a subject that demands a centre light into a window of an even number of lights. This suggests the idea that the architect when he has a church to design might do worse than confer with the glass-stainer as to the scheme of windows, with the view, in some cases, of adapting the shape of the window and the number of lights to the exigencies of the subject. Perhaps this is a counsel of perfection, but, at any rate, you cannot go far wrong in providing us with a centre light. Most subjects from the life of Christ demand a centre light, so instead of four- and six-light windows give us three, five, and seven lights.

I feel very strongly that the architect should get out a scheme of subjects for all the windows in his church, whether there is any idea of them being carried out at once or not. The subjects would not then be such a hideous and incoherent jumble as they generally are now.

Another development would be a firmer grasp of the colour scheme, based on each window having a definite tone-colour in harmony with the subject; and a keynote focussing the colour. Its symbolism must be reconsidered and developed, so that it shall appeal to the Spirit of Reverence (if any such exists) of to-day. Its drawing must be simple, dignified and natural, without affectation of mediævalism. It will be a development to use paint with discretion, and only where it is necessary to give tone and contour. And, finally, by a bolder system of leading, show that we regard it as the main factor in the design. Do not think, therefore, that I wish to ignore all tradition, and expect stained glass to begin *de novo* from this moment. On the contrary, it is necessary to study good examples, and see what is the natural form of expression in this art, and what effects have been obtained with limited means. But surely one may study without falling into the rut of imitation; and let it not be forgotten, also, that our knowledge is increased by learning to avoid many things that have gone before. On the other hand, do not run away with the idea that stained glass is to be learnt by simply looking at old windows. Before anyone can make a cartoon for stained-glass, before anyone can know what style of drawing the painter requires, he or she must have had practice and experience in tracing and painting on glass. As I said at the beginning, "only those who have worked in the best material are qualified to speak of the possibilities lying dormant in it." Let us, then, throw ourselves with enthusiasm into the task of making the best use of the best material, so that by developing it as we develop every other phase of the art we may produce, by our works of imagination and mystery, those feelings of exaltation, of rapture and devotion, it has hitherto been the province of divine music alone to impart.

The Discussion.

Mr. Lewis F. Day, in proposing a vote of thanks to the lecturer, said he thought there was other glass to be got quite as good as Powell's and Prior's. He did not agree that white windows were bad, in view of those at Salisbury and York Minster. He gathered that Mr. Sparrow would have the glass of the future deep and rich, but we had become accustomed to light windows and insisted upon them. He was of opinion that the glass of the future would not be deeper or richer, but lighter and more brilliant. He did not agree that there was no mystery without stained glass. The mystery in great buildings such as St. Mark's, where there was mosaic work, was as great as in buildings where there was stained glass. Mr. J. D. Crace seconded the vote.

Mr. N. H. J. Westlake deprecated the practice of "plating." It was pernicious on the point of durability, as the lead of a window was the first part to decay, and then there was the probability of the falling out of one of the plates. Morever, it added to the weightiness of a window. A window of good stout glass and lead had always a tendency to cockle irregularly, and to tear itself from its copper bands, and this irregularity of weight should be obviated and not exaggerated.

Mr. E. J. Prest called attention to other makes of glass, recommending that made by Messrs. W. E. Chance, and the St. Mungo glass made by a small firm in Glasgow. Mr. F. Lishman, Mr. J. Dudley Forsyth and Mr. Henry T. Hare then spoke.

Mr. Sparrow in reply said it was essential to plate, because the demand for good material was so small that one could not get colours rich enough or in sufficient variety without it.

Correspondence.

Licences for making Valuations.

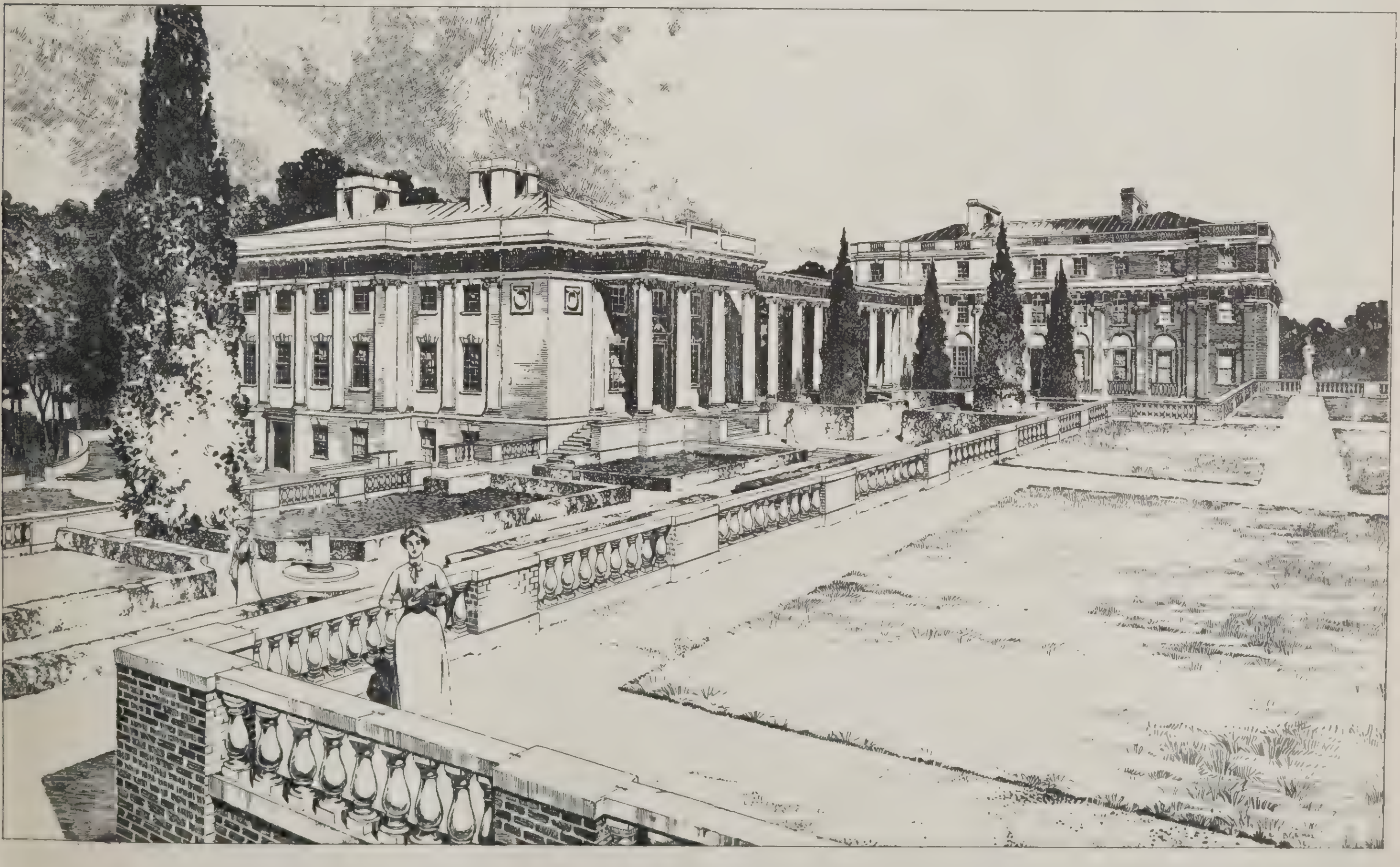
To the Editor of The Builders' Journal.

Sir,—I fail to see how Professor Adams can conclude (Builders' Journal, February 18th, p. 8) that any individual can make a valuation without being duly licensed, from the bare fact that the Stamp Act exempts valuations or appraisements made for the information of one party only. Is it not the case that when the valuation is made for the information of one party only that the Stamp Act simply exempts the *stamp duty* in the document? There is no law to my knowledge which would permit an individual to make such a valuation without being duly licensed, unless it were done gratuitously.—Yours truly,

D. FORBES SMITH, A.R.I.B.A.

With reference to the above letter I may say that, as a rule, laws are not framed to permit something to be done, but to prevent it, and an individual may do anything that is not forbidden by law. But apart from this general view, it is a question of practice, and I believe that I have correctly stated the practice among surveyors, and what it is based upon. Personally I have made many valuations during the last thirty years, but have never held a licence and have never to my knowledge met a surveyor who did hold a licence or considered one necessary when making valuations for clients. The matter has often been discussed, and there is a general impression that a Fellow of the Surveyors' Institution need not hold a licence, although, so far as I am aware, he is under the same limitations as any other surveyor or valuer; at any rate, I have not omitted to take out a licence on that account. I may say also that as an arbitrator under the London Chamber of Arbitration I have not considered it necessary to hold an appraiser's licence, although there acting as between parties.—Yours truly,

HENRY ADAMS, F.S.I.



SWEET BRIAR INSTITUTE, VIRGINIA: SCIENCE HALL AND INDUSTRIAL BUILDING. CRAM, GOODHUE AND FERGUSON ARCHITECTS.

ACETYLENE.*

By JOHN W. WOODALL, M.A., and F. WINDHAM, A.M.I.C.E.

BEFORE I begin this paper on acetylene I think it right to state that I am indebted very much to the Cantor Lectures on this subject given by Professor Vivian Lewes, and the report of the Third Congress on Acetylene held at Paris in 1900.

I propose to confine my remarks to the history and chemical composition of the very curious product of the electrical furnace to which the name of carbide of calcium is given, and from which the gas acetylene is generated by the action of water.

So long ago as 1836 Edmund Davy, in Dublin, who was then Professor of Chemistry to the Royal Dublin Society, described acetylene gas and demonstrated some of its more remarkable properties. He read a paper at the British Association the same year, and showed that when the metal potassium was made by heating a mixture of calcined tartar and charcoal in a large iron bottle a black substance was formed which was readily decomposed by water, and yielded a gas then called bicarburet of hydrogen; subsequently, as we now know, it received the name acetylene. In this paper Professor Davy pointed out the brilliancy with which this new gas burnt, and that it was admirably adapted for artificial light purposes if it could be produced at a sufficiently cheap rate.

Twenty years later, in 1857, Zust and Boettiger made some researches, but it was not until in 1859–62 that Berthelot made known its true composition and method of formation.

He showed that acetylene was formed during the decomposition of many organic substances by heat, and that ethylene, methane, alcohol and ether all yielded this gas when passed through the heated tubes, and finally demonstrated the possibility of synthetising acetylene by passing the electric current between carbon points in an atmosphere of hydrogen.

A further development has been suggested, as Professor Lewes states, which is interesting, namely, that alcohol and probably sugar might be made from acetylene.

Acetylene was first called bicarburet of hydrogen, afterwards klumene, but later acetylene has been adopted.

On analysis the gas is found to contain:—

Carbon - - - - -	92·3
Hydrogen - - - - -	7·7

which answers to the formula C_2H_2.

It has a density of 0·92 as compared with water = 1.

By the action of water on calcic carbide it has a strong and penetrating odour, but when purified from sulphuretted and phosphuretted hydrogen has a somewhat etheral smell which is less unpleasant.

It is easily soluble in water which at ordinary temperatures and pressures takes up a little more than its volume of gas.

According to Professor Lewes:—

Brine dissolves- - - -	0·05
Water ,, - - - -	1·10
Alcohol ,, - - - -	6·00
Paraffin ,, - - - -	1·50
Acetone ,, - - - -	31·0

It was thought that it would not be possible to use acetylene in ordinary gas fittings, as it forms compounds which explode with copper, but subsequent experiments have shown that except with pure copper and under circumstances which cannot occur in ordinary working, the gas fittings, if of the best material and workmanship, may safely be used.

When mixed with air it is very explosive, and detonates under certain conditions with such violence that it cannot *alone* be used for gas engines.

For further information I would beg to refer anyone who is interested in this question to the admirable Cantor Lectures I have already mentioned, which cover far more ground than can be attempted on the present occasion.

Carbide of Calcium.

It is well understood that for commercial purposes acetylene is best generated from carbide of calcium, though there are other carbides of the metals which give off gases more or less consisting of acetylene when decomposed by water.

The history of the manufacture of this substance is detailed at length both in Professor Lewes's lecture and in the Comptes Rendus of the Congress of Acetylene to which I have referred.

It was first made for commercial purposes at Spray, in North Carolina, by Mr. Wilson, and soon after at Leeds and at the great works at Foyers; also many installations in Europe, in France, in the Pyrenees, and the Rhone Valley in Germany, at Neuhausen, near Schaffhausen-on-the-Rhine, and in other places where water power is to be obtained.

The two processes used in making calcic carbide by electric power are the ingot and the tapping process.

In the ingot process the coke and lime, both of which must be very pure, and especially free from sulphur and phosphorus, are carefully mixed and ground finely. The arc is struck in the crucible and the powder is allowed to flow in and partially fill the crucible. An ingot is gradually built up from the bottom of the crucible, the carbon electrode being raised from time to time. The crucible is of metal. The essence of this method is that the coke and lime are only heated to the point of combination and are not "boiled" after being formed.

In the tapping process a fixed crucible is used, lined with carbon. The electrode is nearly as big as the crucible, and a much higher current density is required. The materials do not require to be ground fine. The carbide is heated to fusion and is tapped at short intervals.

Calcic carbide, as formed in the electric furnace, is a crystalline semi-metallic looking substance having a density of 2·2. It can be kept unaltered in dry air, but the smallest trace of moisture in the air leads to the evolution of acetylene and gives a distinct odour.

The purity of the carbide entirely depends on the purity of the materials used in its manufacture. Although great care is exercised, minute traces of sulphuretted and phosphoretted hydrogen are found. The first gives rise to a pungent odour, and the other compound would, if present in any large quantity, cause the gas to ignite when coming into the air.

There are also some other impurities in the carbide. Professor Lewes notices very small diamonds as having been observed, while portions of the crust seem to consist of a very hard combination of carbon, silicon and aluminium, commonly called carborundum, which is used in America as a substitute for emery powder and for grinding wheels, &c.

Acetylene is used to enrich the oil gas used by the railway companies, and Professor Lewes states that fully 3,000 tons of carbide were so used in Prussia in one year by the railways. It has also been found to be useful in enriching a slightly modified form of water gas.

These mixtures are stated to be free from any danger when compressed for railway use, and will no doubt be largely used in the future.

In conclusion, I would wish to quote the words of Professor Lewes that "forty lectures would not be too many to illustrate this subject, and that in time cheapened carbide will enable this valuable hydrocarbon to take its place in the foremost ranks of our illuminants."

JOHN W. WOODALL.

System of Generators.

The various systems, all of which work slightly above atmospheric pressure, 3in. to 4in. of water being about the best pressure to keep the burners free (though the Home Office regulations allow 100in. of water pressure), may be divided into three classes:—

(1) Those in which the calcium carbide and water are brought into intimate contact by a change of level of one or the other substances.

(2) Those in which the water is allowed to fall or come in contact with the carbide drop by drop.

(3) Those in which the water volume largely exceeds the volume of carbide which is allowed to fall into the water.

Class 1.—The machines under class 1 are so-called automatic, but they are mostly unsafe, from the fact that high temperatures may be reached by the carbide, which causes disintegration of the resultant gas, producing benzine, ethylene and various other tarry deposits which tend to foul the pipes and apparatus. It is possible in such an apparatus, if the gas is in contact with air and the carbide is not properly cooled, to set fire to the gas.

Again, the lime absorbs water during the time it is hot and gives it out on cooling, so that the generation of gas goes on though nominally arrested. There have been accidents with this class of machines.

Class 2 are mostly machines combining a rising bell and a carbide charging apparatus: these are largely in use, and act fairly well provided ample means are taken to keep the carbide cool during generation. They are controlled by a rising bell, which automatically shuts or opens the water supply by its rise or descent. They may be subject to undue heat under the following conditions:—

Supposing the generator is fitted to contain a fixed charge of carbide intended to work at a certain rate per hour (*i.e.*, to light so many burners of a certain power), and the users, which is often the case, either use more or larger burners, the generation of the gas then goes on much quicker than the prescribed limit. The apparatus, suppose, is suddenly put out of use, the water supply is automatically shut off, and the carbide feeds on the small amount of water left. Hence three results may occur—either that a dangerous heat is set up; that the carbide may swell and prevent the little water present from getting to it; or that a disintegration of the acetylene takes place and foreign gases and tarry products result.

Class 3.—These are undoubtedly the safest forms, provided that carbide is *not* in a powdered form, but in fairly large lumps and fed in through an air- and vapour-proof hopper.

Hitherto it has been the custom in *automatic* machines of this class to feed with powdered carbide, released or actuated in some way by a hopper controlled by the action of a bell. But seeing that vapour to some extent is always produced by the falling of the powdered carbide into water, the tendency has been to form a conglomerate mass at the mouth of the hopper, consisting of pasty carbide, which prevents the free action of the apparatus. If, however, the carbide is fed in larger lumps, and through a vapour-proof hopper, the chances of success will be almost assured. Such a machine is now on trial and promises good results.

Comparative Cost.

The price of acetylene gas will always be governed by the price of carbide, assuming that 1lb. of carbide will give off 5 cub. ft. of gas which, when burnt in suitable generators at a low temperature, should give 240 candle-power, but as a matter of practice 230 candle-power should be a fair assumption.

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* Papers read before the Society of Architects on Thursday, February 19th, 1903.

Carbide fluctuates in price owing to "corners" made by the manufacturers, restrictions put on the carriage of it (except in bulk). It may be taken, including delivery, cost of non-returnable drums, &c., at about 3d. per lb. in quantities of 1 cwt. and thereabouts. Some allowance must be made for the purifying material also.

Taking coal-gas at 2s. 6d. per 1,000 to cost 1d. per 33ft.: 33ft. should, under very favourable circumstances in the ordinary burners, give 70 candle-power, say 1¼d. per 100 candle-power per hour. One hundred and ten candle-power per hour with acetylene at 3d. per lb., 1½d. per hour. In districts—and there are many of them in country places—where coal-gas is 6s. 8d. and 7s. 8d. per 1,000 acetylene will come well to the fore.

Installation.

The installation is simple. The pipes need be about quarter the area of those for ordinary gas, and there is less heat given into the rooms, as only about one-tenth part of the gas by volume gives off equal light to coal-gas; the heat given off by a flame of equal intensity is about 1,000 C. for acetylene against 1,360 C. for coal-gas.

Taking a room to be well lit up with 70 candle-power, ordinary gas in bat's-wing burners would give off 20 cub. ft. of carbon dioxide in addition to about 60 cub. ft. of water vapour, and would remove about 26 cub. ft. of oxygen.

With acetylene the produce is only—

4 cub. ft. CO_2.
2 „ Water vapour.
5 „ Oxygen.

The pipes and fittings used should not be of copper, copper and silver having properties of forming acetylides of the metal when in contact with the gas and water. Iron and compo suit well, and the mountings of a good brass alloy with an admixture of tin. The cocks should be well ground in, and the joints of the system throughout made with a spirituous mixture, such as red lead and gold size, shellac and spirit. Ordinary red lead and oil is not suitable unless given a very long time to dry. As the pressure being much more than double and sometimes four times that of ordinary coal-gas, the weak parts are soon discovered by the gas, and unset joints made with oil may be blown through before they have time to set.

The whole system should be well tested, and allowed to stand for some hours with the pressure double that at which it is intended to work. Ordinary gas fitters are as a rule too careless, and qualified people should be engaged to fit up in every case, otherwise the apparatus may be blamed.

Purification.

Good results will be obtained for purification. Users can make a simple form of mixture with lime and coke sprinkled lightly over trays. The coke may be previously steeped in chloride of lime or hydrochloric acid; and a spoonful of chloride of lime to a bucket of water put into the tank acts as a purifier.

In winter it is well to have the bell working in a strong solution of salt (preferably chloride of calcium), as this mixture will not freeze in this climate under covered places where generators are likely to be kept; and again it is well to keep to this mixture for everyday work, as much less gas is absorbed by the saline water, ordinary water being able to take up 1·1 times its own volume, whereas a brine solution will only absorb 0·05 of its volume.

Portable Apparatuses.

So far no mention has been made of portable apparatuses, which must assume large proportions in the colonies and hot climates, where paraffin and coal-gas are difficult to procure and convey. Carbide in wet or dry climates, if treated by a preparation, can be made to resist the action of moisture for long periods. The treatment may be one.

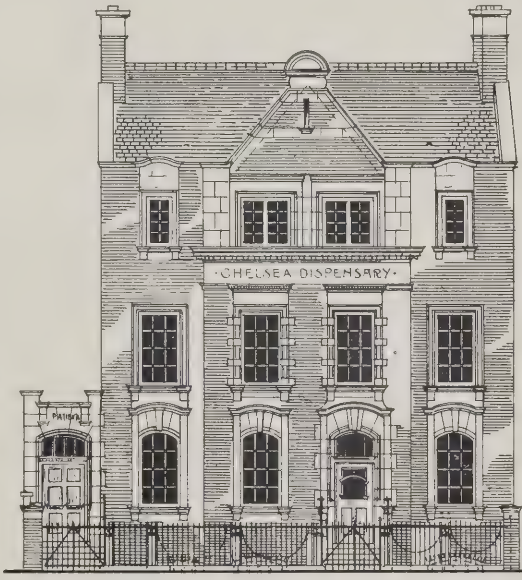
(1) By which the carbide is coated with a glucose mixture which absorbs the lime when mixed with a preponderance of water.

(2) Carbide intimately mixed in the plastic state, with heavy hydro-carbons.

(3) Carbide coated with an elastic varnish, coupled with a hydro-carbon capable of absorbing some of the impurities resulting in the generation of the gas, and capable of intensifying the flame.

No. 1.—Taking No. 1, the proportion containing glucose, which itself contains a certain proportion of water, naturally absorbs some of the lighting qualities of the gas, and adds a considerable weight to the compound. The glucose covering is readily attacked by moisture in the air and has to be kept in well-secured air-tight cases.

No. 2.—This mixture is not so subject to action by moisture as the heavy oils are incorporated in the mass, but weight for weight the amount of active carbide is far less as compared with the same weight of good active carbide, and consequently the gas production per lb. of material may be reduced 25 per cent.



A. W. SHEPPHARD AND J. F. BURKINSHAW, ARCHITECTS.

No. 3 is a process which treats the carbide without decreasing its efficiency in any way, either by contamination with nascent vapour or by dilution with extraneous oils. It amounts to a flexible film applied to the carbide under a temperature exceeding 212 degs. Fahr., at which no water can be present; it adds very little to the weight—about 2 per cent., an amount that is practically not worth considering, seeing that raw carbide may lose as much as 10 per cent. to 20 per cent of its gas efficiency if granulated or exposed during the ordinary process of turning off into small charges.

It will give off the full gas efficiency due to the carbide as it leaves the factory fresh from the furnace, the ingredients in the film helping to reduce the endothermic action of the gas generating process, thereby giving a purer gas, and at the same time absorbing many of the heavier vapours which tend to clog the burners.

The cost of this compound by weight, therefore, gives its best value for money.

I have alluded to prepared carbide only in connection with portable apparatuses, the reason being that in small apparatuses of this kind there is not gas-room sufficient for the development due to raw carbide; hence some form of carbide is generally used, treated in some way with a restraining medium.

Again, seeing that portable apparatuses are far more subject to exposure, it is almost necessary to have some means of protecting the charge.

F. WINDHAM, A.M.I.C.E.

WIDNES AND RUNCORN BRIDGE.

CONSIDERABLE progress has been made with the erection of this bridge during the last few months. The foundations are completed on both sides of the river, the eight large cast cylinders having been taken down to the solid rock, about 35ft. below the Manchester Ship Canal, and filled with strong Portland-cement concrete. These cylinders are more than 9ft. in diameter, and are braced together in clusters of four with strong steel bracing. In sinking these cylinders through the Ship Canal bed compressed air was adopted, the cylinders acting as caissons, which made the operation rather tedious on account of the excavated material having to be passed through the air-lock. The foundation cylinders on the Widnes side were most easily laid, the rock being bare at low water. A large portion of this rock was rotten at the surface, and had to be removed to get to the solid rock, to which the cylinders were securely bolted.

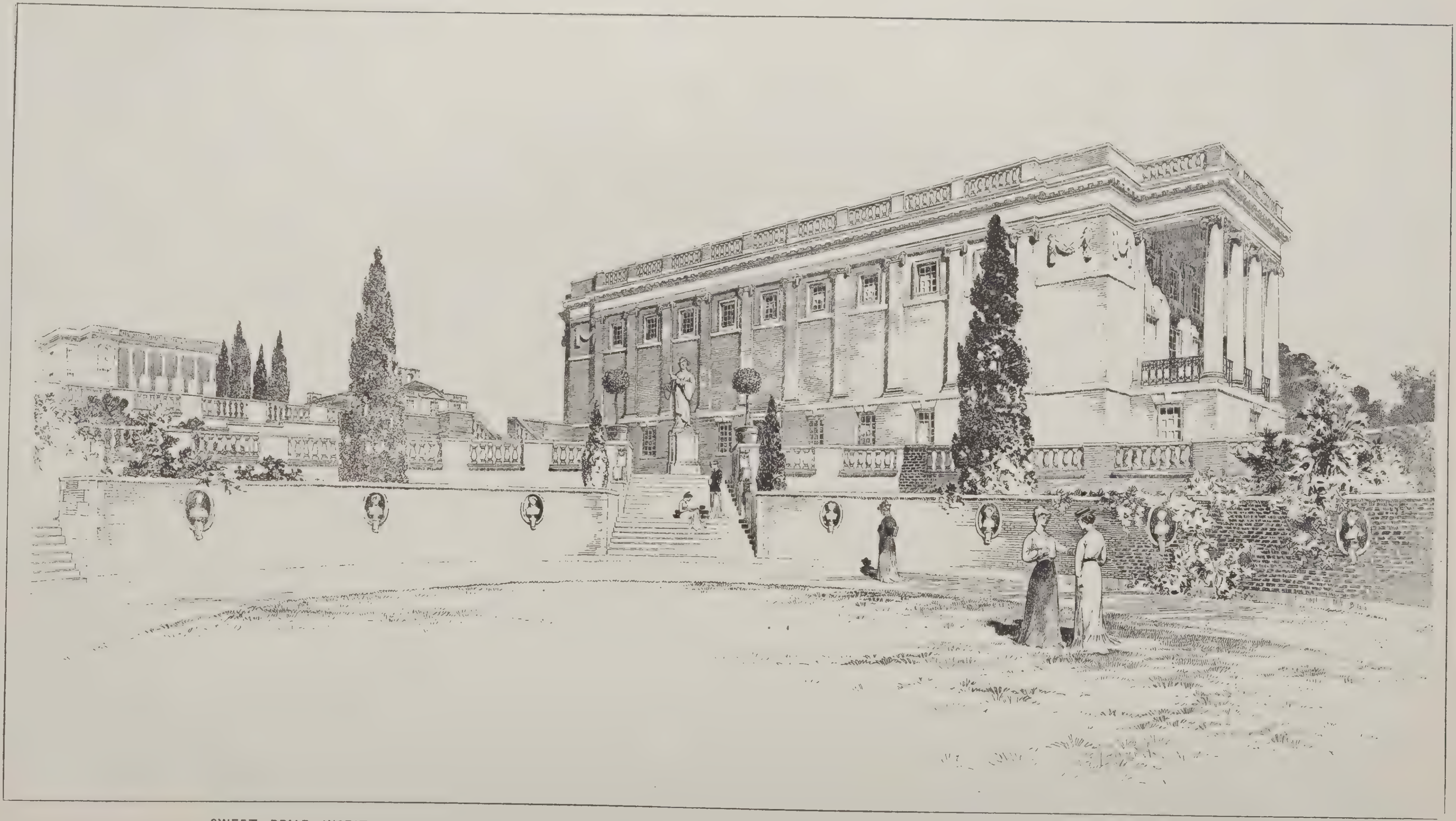
The erection of the four steel towers—to be about 190ft. high—will shortly commence, the erection being carried out simultaneously on the four clusters of cylinders on each side of the river. A tall braced steel "stallage," 140ft. high, will be used for the purpose, having a derrick crane on the top.

The anchorages are completed on the Runcorn side, and nearly so on the Widnes side, the massive anchor plates being embedded in the solid rock about 30ft. from the surface and filled in with strong cement-concrete. The masonry approaches on the Runcorn side, which have necessitated the construction of massive stone and concrete retaining walls, &c., are nearly completed, and will make a great improvement in the appearance of that part of the town. The towers will probably be completely erected by the middle of April, when the laying of the massive steel cables, each of 12in. diameter, will be commenced.

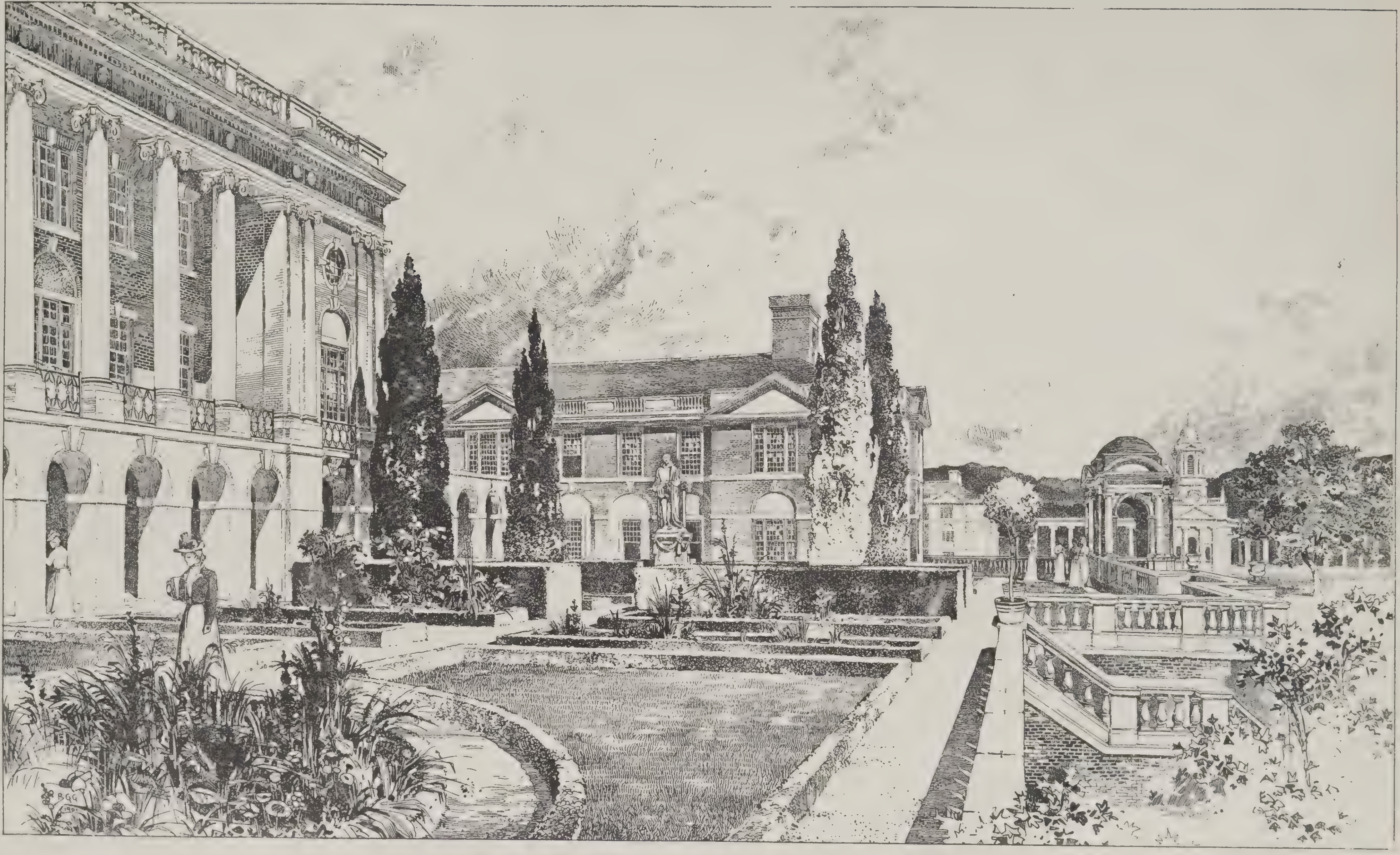
The bridge will be totally unlike any other structure in England. On account of the almost unique conditions and the great span of 1,000ft. clear, the design and erection must naturally be a source of great anxiety to the engineers, Mr. John J. Webster, M.Inst.C.E., of Westminster, and Mr. John T. Wood, M.Inst.C.E., of Liverpool; but everything at present points to the successful completion of the work.

The Chelsea Dispensary.—Lord Cadogan recently laid the foundation-stone of the new Chelsea, Brompton and Belgrave Dispensary now being erected in Manor Street in place of the old building at Sloane Square. Messrs. A. W. Sheppard & J. F. Burkinshaw of 21, John Street, Adelphi, W.C., are the architects. The main structure is being built of red brick relieved with terra-cotta dressings. A residence will be provided for the house surgeon; a committee room, &c., for the management, spacious waiting and consulting rooms, with an isolation room and dispensing department and workrooms attached are also provided. It is hoped that the building will be opened this summer. The builders are Messrs. Stimpson & Co., of 78, Brompton Road, W. The cost will be £3,000.

THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, March 4th, 1903.



SWEET BRIAR INSTITUTE VIRGINIA, U.S.A.: THE GYMNASIUM FROM THE BASE COURT. CRAM, GOODHUE AND FERGUSON, ARCHITECTS.



SWEET BRIAR INSTITUTE, VIRGINIA, U.S.A.: ON THE UPPER TERRACE. CRAM, GOODHUE AND FERGUSON ARCHITECTS.

Keystones.

Turner's House at Twickenham—Sandycombe Lodge—is to be sold by auction. It is said to have been designed by Turner himself.

The Cottage Hospital at Dunfermline is being extended by large additions to the east and west wings from plans by Messrs. Sydney Mitchell & Wilson, of Edinburgh, at a cost of about £3,000.

At All Saints' Church, Bubworth, Yorks, a new oak screen and clergy and choir stalls have just been installed from the designs and under the superintendence of Mr. G. Malam Wilson, M.S.A., of Sheffield.

The King's Sanatorium.—Arrangements for the purchase of a site near Haslemere for the King's consumption sanatorium are practically completed. The site is 600ft. above sea-level and about 120 acres in extent.

Capetown Exhibition.—An exhibition of British and South African industries is to be held at Capetown towards the end of October next. The object is to bring the British manufacturer and the Colonial market more immediately together.

Glasgow Institute of Architects.—At last week's meeting the secretary reported that the Technical College prize had been awarded to Mr. Vernon Constable. It was agreed to continue the School of Art prizes given by the Institute, and Messrs. Boston & Keppie were appointed adjudicators.

City Churches.—In the House of Commons last week, on the motion of Mr. Talbot, a return was ordered to be presented of the churches in the City of London pulled down or condemned during the period from August 2nd, 1894, to December 31st, 1902, with full particulars of the circumstances.

In the Royal Academy Schools this year is an important one, for the biennial gold medals and travelling studentships are being competed for. The Creswick subject for the decoration of a portion of a public building is "Charity," and for the cartoon prize "Victory." In architecture the gold medal and travelling studentship of £200 will be given for the best design for a domed church of 40ft. span and not less than 120ft. long inside.

Leeds and Yorkshire Architectural Society.—A paper on "Street Improvements in Leeds and Elsewhere" was read before last Thursday's meeting of this Society by Mr. Frederick Musto, A.R.I.B.A. He said the aspect of the streets and most of the buildings of Leeds was far behind Manchester, Liverpool, Glasgow and even smaller towns like Leicester and Newcastle. "There is an air almost of squalor in Leeds that even the City Square and Boar Lane cannot destroy, and that certainly Briggate will not reduce. "He hoped it would be a long time before the dignity of City Square was spoiled by the ceaseless careering of trams round it. The corner between Cookridge Street and Park Row was a typical Leeds crossing, with a terrible "splayed line." Criticising the present scheme for widening Cookridge Street, he contended that the building line should be set back so that the Leeds Institute closed in the vista. Briggate he described as "too sad for words." With regard to what might be done, Mr. Musto suggested a line of access from the end of Roundhay Road to Woodhouse Lane, near Carlton Hill. He would like, too, to see a street cut in prolongation of Oxford Place by Park Square to Park Place; and a better access to the Yorkshire College and Grammar School than was provided by the present College Road, with its plentiful supply of back areas and middens.

The Engineering Standards Committee published the results of their investigations on Monday last.

Messrs. J. & W. Henderson, of Aberdeen, have secured the contract for about 6,000 tons of cement from Messrs. Morrison & Mason, Ltd., Glasgow, the contractors for the new Ferryhill Viaduct.

A Monument to the late Archbishop Temple is proposed to be erected in Canterbury Cathedral at a cost of £500. Mr. Caröe is suggested as the architect and Mr. Pomeroy the sculptor.

Birmingham Municipal School of Art: Head-Mastership.—This position will become vacant in September next, on the retirement of Mr. Edward R. Taylor. Enquiries should be addressed to the secretary, and applications for the appointment to the chairman of the management sub-committee, Municipal School of Art, Birmingham. The latest date for receiving applications is Saturday, March 21st.

Royal Academy Exhibition, 1903.

The receiving day for architectural works at this year's Royal Academy Exhibition is Friday, March 27th. We shall be pleased, as in previous years, to receive drawings from intending exhibitors, and undertake to deliver them at Burlington House free of charge; but they must reach us at latest *by noon on the day mentioned. The* earlier *they are sent the better.*

Law Cases.

Harrogate Building By-Laws.—In the King's Bench Division of the High Court of Justice the special case stated between the Mayor and Corporation of Harrogate and Mr. Dickinson, a builder in that borough, was recently heard, the issue being as to the rights of builders who deposited plans under the old by-laws of the town to continue the work to which those plans related under the new borough by-laws and under the Local Act of 1893.—Counsel for the plaintiff said that the defendant deposited plans in 1894 for the erection of dwelling-houses and stables on land in Walker Road and Bilton Drive. The houses were duly erected, but on the defendant proceeding to build a stable and coach-house at the beginning of last year the inspector employed by the Corporation gave him notice that he was to discontinue building and deposit fresh plans, the old ones not complying with the new by-laws in several particulars. Some of the houses had been completed, and satisfied the old by-laws, but there was a question in reference to others as to which it was required that the new by-laws should be complied with.—Mr. Justice Wright in delivering judgment said the builder claimed that the old by-laws applied, because 117 of the new by-laws, repealing the old ones, excepted two classes of cases, and it was argued that the buildings now in question formed one or other or both of these exceptions, and were therefore governed by the old and not by the new by-laws. In fact, the whole case was based on the view that these plans, which were approved in 1894 by the then sanitary authority, were one plan. If it was one plan for the whole of the purposes of this case, then there was no question that the work was commenced on that plan, and that the approval of the Corporation was still in force. He did not think the grounds which had been advanced were maintainable. It seemed to him that this was simply a number of plans for convenience put on one sheet of paper in order to show the sanitary authority what the general scheme of arrangement was to be. The old by-laws provided for a plan of each building, and if the present was not a plan of each building, then he very much doubted whether the by-laws had been complied with at all. He could not agree with the argument that because some of the buildings had been commenced, therefore all had been commenced. Judgment must therefore be for the plaintiff corporation.

LONDON COUNTY COUNCIL.

At last week's meeting of the Council a report was presented from the Improvements Committee in respect to the widening of the Hampstead Road. The question has been several times before the Council, but it has been decided in the past not to proceed with the improvement unless the borough council gave sanction to tramways being laid along the Tottenham Court Road. It was recommended: "That the estimate of £245,500 submitted by the Finance Committee be approved and that the Improvements Committee be authorised to incur expenditure on capital account up to the amount named for the purpose of the widening of Hampstead Road at the southern end." After a long discussion an amendment was carried referring the matters back for further consideration.

The Colney Hatch Fire.

The Asylums Committee, reporting on this fire and the verdict of the coroner's jury, stated with regard to other temporary accommodation that the temporary buildings of the Manor Asylum and the Hanwell annexe were constructed with plastered interiors on steel lathing. The annexe for males at Banstead, though matchboarded, was not of the same design as the buildings which were destroyed at Colney Hatch. They had, however, thought it desirable to make certain alterations in the corridors so as to minimise the danger in the event of an outbreak of fire. They were also, with the same object and with the knowledge and concurrence of the Commissioners in Lunacy, having alterations carried out at the Manor Asylum and Hanwell temporary buildings. They hoped, as soon as possible, to report to the Council as to further asylum accommodation now necessary and the manner in which they thought it should be provided.

Mr. J. R. Cousins said the Council was the authority for the structure of the buildings and for the proper means of escape from fire. He therefore thought they should destroy the temporary buildings, which were admittedly faulty in construction. In his opinion the Council were greatly to blame in allowing the temporary buildings to be constructed at all. Mr. Hubbard, chairman of the Committee, said that until the recent fire they had not the least idea that the building could catch fire in such a way, and with their exits they had believed that the patients could have been got away in a few seconds. The insurance companies did not think there was much risk, for they insured the buildings at 2s. 6d. per cent. With regard to their other asylums, at Banstead they had removed the felt and wood from the roof and the corridor, and proposed to lay down a concrete floor. At Hanwell, where they had a subway running along the corridor, they were building up walls to prevent a draught. They were trying to remove their patients to permanent buildings as quickly as possible. The water-supply was adequate at these asylums. The Council were licensing buildings in London which were built on exactly the same lines as those destroyed at Colney Hatch. The Committee had someone constantly on the watch in a dormitory night and day. They had also a hose, the turn of one wheel sufficing to pour volumes of water on to the fire. They thought, therefore, that all proper precautions were taken.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Buildings to Measure around Ealing.

London, W.—Gothic writes: "Are there any old country churches within easy cycling distance of Ealing which would be worth measuring for the R.I.B.A. Intermediate Examination?"

There seems to be little which would be of use nearer than St. Albans, and the abbey-church there has been so drastically "restored" that little original work could be found for the purpose mentioned. Would Windsor be too far away? G. A. T. M.

Practical Geometry.

Bradford.—Calculation writes: "Which is the best book suitable for home study for the Science and Art Department examination in practical plane and solid geometry, Advanced Stage?"

Angel's "Practical Geometry and Projection," 2 vols. (Collins, 10s.) is the best general text-book on the subject, but recent developments of the syllabus render some study necessary of modern graphic algebra as indicated in Hall's "Short Introduction to Graphical Algebra" (Macmillan, 6d.).

HENRY ADAMS.

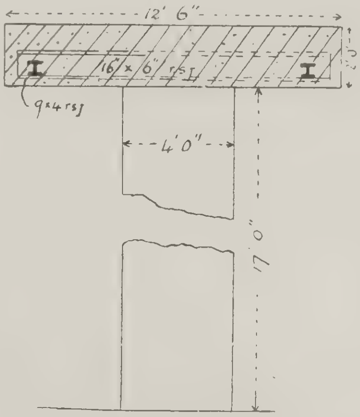
Claims for Extras due to Shrinkage of Tracing Cloth.

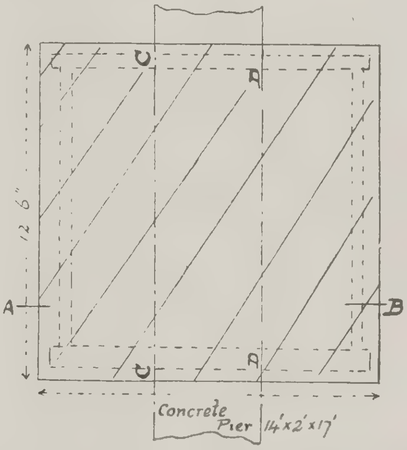
London, N.—Munro writes: "(1) A. contracts with B. to build three shops and premises for him from plans, &c., prepared by C. The size of site scaled from the plan shows it to be 60ft. by 100ft. 3in., but from actual measurements when the job was started it was found to be 60ft. $10\frac{1}{2}$in. by 101ft. 3in. A., at the completion of the work, sends in an claim for an extra on the increased size of the site beyond what was shown or provided for in specification or quantities. B. refuses this claim and lays the responsibility on C., who makes the excuse that as the drawings used as the contract drawings and the copies given to A. were sun-prints from cloth tracings made by C. from accurate pencil drawings, he is not liable or responsible for the shrinking of the tracing cloth. No written order was given to A. to do these extra works. What course should A. adopt to have his claim met? (2) Is it possible to get a tracing cloth that will not shrink after use sufficiently to cause serious mistakes? I can never depend on cloth tracings being accurate, and especially so when coloured."

(1) A. seems to have put himself out of court by not calling attention to the discrepancy when it was first noticed, as it must have been when the work was set out. There are, also, one or two points which the question does not elucidate. One is the responsibility for the quantities. If taken out by C. from his pencil drawings they should be accurate. Besides this, if the scale was, as it usually is and always should be, *drawn* on the tracing cloth, it would have shrunk together with the cloth, and the work would scale accurately to the scale given. On the other hand, if the scale was merely described in words, the architect was certainly guilty of negligence in not either drawing it or figuring his dimensions, it being common knowledge that both tracing cloth and sun-prints are unreliable in scale; and it is even to be feared that a certain class of architects, knowing this, will deliberately omit dimensions and the drawn scale to obtain very full money's worth for the building owner—which, if proved, would be fraud. Summing up, it therefore seems that action against the employer would probably fail owing to acquiescence when the error was discovered, while action against the architect for negligence might succeed; but a local solicitor should be consulted, with whom all points could be discussed. (2) No. Dimensions should be given very fully, and the scale drawn on. G. A. T. M.

Strength of Concrete Slab.

Newcastle.—Concrete writes: "How should the safe distributed dead load be found on a square slab of concrete 2ft. thick supported along the centre only on a concrete pier 4ft. wide? The slab is stiffened by a frame of rolled steel joists. It is twelve months old and gauged 6 to 1, clean clinkers and sand and Portland cement of sound quality. In an exposed position should allowance be made for wind-pressure on a rectangular-shaped load?"





In order that the total load, say, of bricks, for example, may be distributed equally over the slab it must be piled in three distinct sections, separated by the lines C C and D D; and no interlocking or bonding or mutual support in any way of these three sections of load must take place across those dividing lines. It is obvious that the middle section of load could never crush the slab, for before the slab would crush under direct compression the foundations would yield, or the stability of the wall itself would be overcome. We must therefore first ascertain how much load the overhanging portions of slab would safely bear, and then we can pile the middle section of load to the same height as the side sections so as to produce an equal pressure on every square foot of the slab. Each of the two overhanging portions of the slab is virtually a cantilever, projecting 51in., 150in. wide and 24in. deep. The centre of pressure of the equally-distributed load on each cantilever is at $25\frac{1}{2}$in. out from the face of supporting wall. Thus the length of the lever by which the overhanging load produces its greatest bending moment is $25\frac{1}{2}$in., while the length of the counter-lever by which the slab resists that load is 24in., *i e.*, the depth of the cantilever. Let w = the load equally distributed over each of the cantilevers. Then $w\,\frac{25\frac{1}{2}}{24} = 1{\cdot}0625\ w$ = the total stress of each of the overhanging loads, which occurs in each case at the intersection of the cantilever with the face of the supporting wall. The safe stress (tensional) on concrete, of such quality as is specified in the question, may be taken as $= \frac{1}{37}$ ton per in. of sectional area at the plane where the face of supporting wall intersects cantilever. The safe stress (tensional or compressional) on steel rolled joist may be taken as = 6 tons per in. The 16in. by 6in. joist weighing 62lbs. per ft. has sectional area = 18·6in. Thus the safe stress in two of those joist. = 2 × 18·6 × 6 = 223·2 tons. The sectional area of cantilever at wall-face plane = 150 × 24 = 3,600in. 3,600 − (2 × 18·6) = 3,562·8in. × $\frac{1}{37}$ ton = 96·29 tons = safe stress on concrete. 223·2 + 96·29 = 319·49 tons = safe stress on each concrete-steel slab cantilever. $\frac{319{\cdot}49}{1{\cdot}0625} = 300{\cdot}69$ tons = safe load distributed on each cantilever. 150in. broad × 51in. projection = 7,650in. = top surface area of one cantilever. 150^2 = 22,500in. = top surface area of entire slab. $\frac{300{\cdot}69 \times 22{,}500}{7650}$ = 884·38 tons = safe load distributed on slab. Would the wall carry this load safely? The two 9in. by 4in. joists are quite useless, and will do more harm than good. If the two 16in. by 6in. joists were omitted, the concrete slab would carry safely $\frac{96{\cdot}29}{319{\cdot}49} \times 884{\cdot}38 = 266{\cdot}2$ tons distributed. This weight would be safely carried by the wall. As "Concrete" gives no particulars of the nature of the proposed load, I must answer his question about the wind by supposing the load to be, say, a solid pile of bricks, having an area of base $= 12\frac{1}{2}^2$ = 156·25ft. Taking the weight of 1 cub. ft. of brickwork as = 1 cwt., the 884·38 tons load would occupy 884·38 × 20 = 17,687·6 cub. ft. $\frac{17{,}687{\cdot}6\text{ft. volume}}{156{\cdot}25\text{ft. base area}}$ = 113·2ft. = height of brickwork load (!). 113·2 + 2ft. thickness of slab + 17ft. height of wall = 122·2ft. = total height of surface resisting the wind. 122·2 × 12·5 = 1,527·5ft. = area of rectangular surface resisting the wind. $\frac{122{\cdot}2}{2}$ = 61·1ft. = height above ground of centre of horizontal wind-pressure. $\frac{1}{40}$ ton = greatest wind-pressure per ft. of resisting area in an exposed place. $1527{\cdot}5 \times \frac{1}{40} \times 61{\cdot}1 = 2333{\cdot}25$ft. tons = moment of greatest wind-pressure. 18 tons slab + 42 tons wall beneath slab + 884·38 tons load = 944·38 tons = total weight of structure and loads resisting the wind. $\frac{2333{\cdot}25}{944{\cdot}38}$ = 2·47ft. = effective base needed to counterbalance the overthrowing force of the wind. But the effective base provided is = $\frac{1}{3}$ width of supporting wall, *i.e.* $= \frac{4\text{ft.}}{3}$ = only 1·33ft., thus leaving a deficiency of at least = 2·47 − 1·33 = 1·14ft., so that the wind force above specified would overthrow the structure and its 884·38 tons load.

FRANK CAWS, F.R.I.B.A.

Fixing Pencil Drawings.

Blackpool.—E. S. E. writes: "Please name a good recipe for preventing the pencil from smearing on drawings."

Washing with milk, or even tea, will be effectual. There are good fixatives which can be obtained at any artists' colourman.

Labourers' Cottages.

Harpenden. — Church Green writes: "Which are the best recent publications, newspaper articles or correspondence on the question of cottages for labourers in villages and country towns? I want something which goes into the question of cost and wages, as well as planning and material?"

Write to the publisher, "Country Life," Geo. Newnes, Ltd., 20, Tavistock Street, Covent Garden, W.C., and The Country Gentlemen's Association, Ltd., 16, Cockspur Street, S.W.

Designing Tall Chimneys.

Bradford.—Calculation writes: "Kindly give an example of calculations required to get the height and the width at top and bottom of a factory chimney."

Suppose the chimney to be wanted for two Lancashire boilers each having two furnaces 2ft. 6in. wide and 6ft. long. The grate-surface will be 2·5 × 6 × 2 × 2 = 60 sq. ft. The area of flue should be one-fifth of this, say 12 sq. ft., or say 2ft. 6in. wide and 5ft. high at centre. The sectional area of chimney should be half that of the main flue, say 6 sq. ft., or 2ft. 6in. square. The height may be taken as 80ft. By London County Council regulations the chimney shaft must be not less than one-brick thick for the top 20ft., and set off inside half-brick thicker every 20ft. below. The batter must not be less than 2½in. in 10ft., and the width at base must be not less than one-tenth of the height. The projection of the cap must not exceed the thickness of the brickwork supporting it. The usual bond is English, or for circular shafts not more than four courses of stretchers to one of headers. Lias lime mortar is considered to be superior to Portland cement for building a chimney shaft, as it is said to be less rigid and to stand heat better. Hoop-iron bond may be inserted if desired at intervals of about 5ft., interlaced at the junctions. The design may now be drawn out as shown by the accompanying illustrations, but before completion it would be well to calculate the stability as follows:—

Let—

p = wind-pressure lbs. per sq. ft. on normal surface.
P = total pressure of wind.
x = leverage of wind or height from centre of gravity of surface from ground line.
w = weight of brickwork lbs. per cub. ft.
W = total weight of chimney above ground line.
y = leverage of resistance or distance of resultant of thrust from centre line in feet.
l = distance of resultant of thrust from outer edge in feet.
A = area exposed to wind in sq. ft.
H = height in feet.
b = width of base in feet.
t = width of top in feet.

Then—

Effort = Resistance, or $P.x = Wy$.

$$A = \frac{H(t+b)}{2} = p\frac{80(4+8)}{2} = 480 \text{ sq. ft.}$$

$$P = A \times p.$$

$$x = H\frac{b+2t}{3b+3t} = 80\,\frac{8+8}{24+12} = \tfrac{4}{9} \text{ of } 80 = 35\dot{5}\dot{5}\text{ft.}$$

W = say 100 tons approximately.

$$l = \frac{2b^2 - t^2}{6b} = \frac{(2 \times 8^2) - 4^2}{6 \times 8} = 2\tfrac{1}{3}\text{ft.}$$

$$y = \tfrac{1}{2}b - l = 4 - 2\tfrac{1}{3} = 1\tfrac{2}{3}\text{ft.}$$

Now $x : y :: W : P$.

$$\therefore P = W\frac{y}{x} = 100 \times 2240 \times \frac{1\frac{2}{3}}{35\frac{5}{9}} = 10{,}500\text{lbs}$$

and $p = \frac{P}{A} = \frac{10500}{480} = 21{,}875$lbs. per sq. ft., the safe wind-pressure upon the chimney shaft, or, in other words, the wind-pressure acting uniformly over the whole surface, which will make the pressure *nil* on the inner edge and a maximum on the outer edge.

There is no doubt that in ordinary situations this would be sufficient, as the assumed maximum of 56lbs. per sq. ft. is only reached in very exposed situations, and there is no proof whatever of the alleged pressure of 80lbs. per sq. ft. said to have been observed at Liverpool in 1868. The whole question of wind-pressure as measured by velocity is in a chaotic state, and should be taken up by some competent authority.

HENRY ADAMS.

"Academy Architecture."

Maidenhead.—J. W. writes: "Is there any record published of the drawings at the Royal Academy, similar to the special number of the 'Architectural Review' which used to be issued?"

Yes. "Academy Architecture," published annually in two volumes, the first in June, the second in December. Apply to the proprietor and publisher, Alexander Koch, 58, Theobald's Road, London, W.C.

Building, &c., Inspector.

York.—M. E. W. writes: "I have a friend who is desirous of studying to qualify as a sanitary and building inspector, but he has lost the use of his left hand. Do you think this would be detrimental to his success in getting such a post under a local authority?"

As your friend would in the ordinary course of his duties have to mount ladders and walk about scaffolds, also descend manholes and sewer-trenches, we fear he would find the loss of his left hand rather a serious matter. His success in obtaining such an appointment is dubious, as he would probably be in competition with a large number of men having the use of all their limbs.

Dancing Floor.

Victor writes: "Kindly give me some idea of the construction of a spring-floor for dancing, about 70ft. by 40ft."

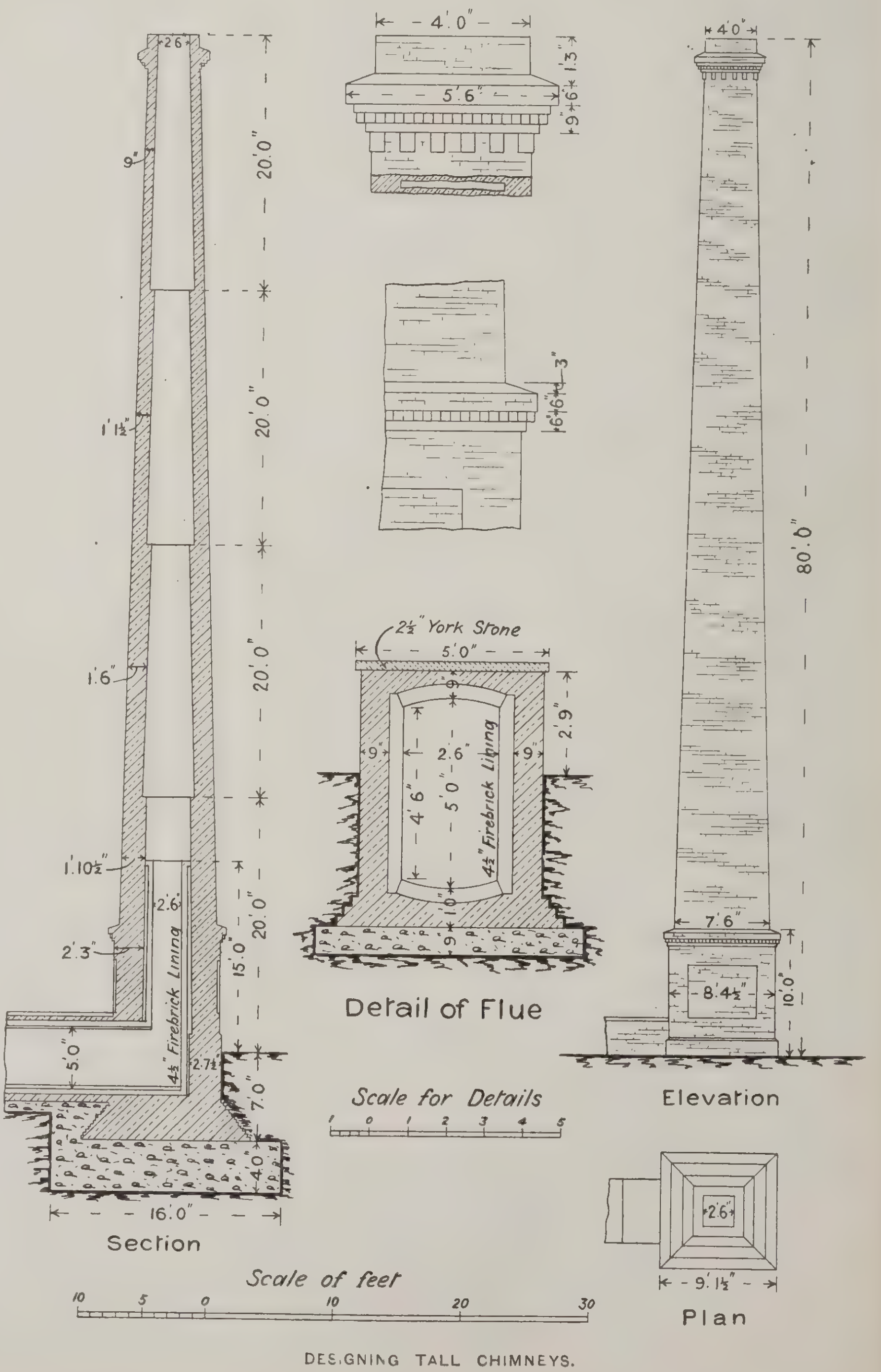
See our issue for January 26th, 1898.

The Society of Architects.

London.—Registration writes: "Is it of any value to an architect to be a member of the Society of Architects?"

The Society, of course, gives its members a certain standing, and, in addition, there are the advantages of social intercourse, the hearing of papers read, and other matters helpful to an architect. See our issues for October 19th, 26th and November 2nd, 1898.

The London Master-Builders' Association Diary and Handbook for 1903 has been issued, price 2s. 6d. (31 and 32, Bedford Street, Strand). It contains a great deal of useful information.



DESIGNING TALL CHIMNEYS.

LONDON BUILDING ACTS (AMENDMENT) BILL, 1903.

By EDWIN B. B. NEWTON, A.M.I.C.E., F.S.I.

(Concluded from p. 20, No. 420.)

PART 3 deals with provisions for reducing risk of fire in buildings, separation of buildings or staircases, passages, &c.

Section 17 details certain provisions which are to take effect in lieu of section 74 of the Act of 1894. The latter section, 74, deals with the matters in three sub-sections.

The first is as follows: "Every building shall be separated either by an external wall or by a party wall or other proper party structure from the adjoining buildings (if any) and from each of the adjoining buildings (if more than one)." The new enactment is similar, but the word "proper" before the words "party structure" above is omitted and the following words added after ". . . more than one)," "and every such party structure shall be constructed of incombustible materials to the satisfaction of the Council." That is to say, the words "and . . . Council" are in substitution for the word "proper." The use of the word "incombustible" and not "fire-resisting" is noteworthy. Both words are used in the Act of 1894.

The second sub-section of section 74 of the Act of 1894 is as follows: "In every building exceeding 10 squares in area used in part for the purposes of trade or manufacture and in part as a dwelling-house the part used for the purposes of trade or manufacture shall be separated from the part used as a dwelling-house by walls and floors constructed of fire-resisting materials and all passages staircases and other means of approach to the part used as a dwelling-house shall be constructed throughout of fire-resisting materials. The part used for purposes of manufacture shall (if extending to more than 250,000 cub. ft.) be subject to the provisions of this Act relating to the cubical extent of buildings of the warehouse class. Provided that there may be constructed in the walls of such staircases and passages such doorways as are necessary for communicating between the different parts of the building and there may be formed in any walls of such building openings fitted with fire-resisting doors."

Section 17 (5) of the new Bill is similar, but is more elaborate. The words commencing on the line (*ante*) "separated from . . . . fire-resisting materials" are altered so as to read "separated from the part used as a dwelling-house vertically by walls or partitions and horizontally by floors, such partitions and floors to be constructed of fire-resisting materials other than wood." Walls, unless deemed to be partitions, need not apparently be fire-resisting, though no doubt the Act of 1894 already ensures this.

The desirability of this limitation of the use of wood is doubtful. Whatever may be one's opinion as to the value as a fire-resisting material of wood specially impregnated with various chemicals so as to obtain fire-resisting qualities, it is the view of by no means a small number of those who are qualified to give an opinion in the matter that there are few safer and more reliable fire-resisting materials than *solid* wood (particularly if it be hardwood) when used of a considerable thickness, say of more than 6in.

A floor of solid timber 12in. to 14in. thick would be in many cases much more capable of resisting fire than some of the so-called fireproof combinations of concrete and iron.

The words in section 74, "means of approach" (*ante*) are extended by the addition of "from the street," and, in addition to being constructed of fireproof materials, they must be "encased with" them, and the fireproof materials are to be "other than wood to the satisfaction of the district surveyor."

By the new section 17 (6) definite widths for all such "passages, staircases and other means of approach" are set forth, varying according to the frontage of the building (ignoring the return frontage of a corner building). For a frontage of 20ft. the width of the passage or staircase is to be at least 2ft. 6in.; for one exceeding 20ft., but not exceeding 30ft., 3ft.; and for one exceeding 30ft., 3ft. 6in.

It would seem preferable that staircases and other means of exit from such buildings should be governed by extent and area of buildings rather than by frontage, as cases are conceivable where a very large building might have but a small frontage.

It would be interesting to know in what manner the widths of passages in relation to street frontage were arrived at. It cannot be said they are excessive, but the widths and the variations in them seem difficult to justify.

A staircase enclosed and constructed as aforesaid is now [section 17 (7)] to be provided in every such building as is referred to in section 17 (5) and (6) and which has any storey above the ground storey, and if there be any space between the foot of such staircase and the street, a passage as before mentioned is to be provided, "unless means of escape to the satisfaction of the Council are provided from the side, rear or roof of the building." The last nine words appear to be quite unnecessary.

By section 17 (8), if the frontage of such a building exceeds 40ft. another such staircase, and if requisite a passage as before, shall be provided, unless the Council otherwise permit, for every 40ft. or part thereof beyond the first 40ft.

Section 17 (9), with some modifications, corresponds to the provision in section 74 (2) of the Act of 1894 (*ante*). Instead of the words "there may be formed in any walls of such buildings openings fitted with fire-resisting doors" the words used are, "all internal doorways leading from the portion of the building used for trade or manufacture to such staircases and passages shall be fitted with self-closing doors of fire-resisting material hung on frames of fire-resisting material."

The third sub-section of section 74 of the Act of 1894 is as follows: "In every building exceeding 25 squares in area containing separate sets of chambers or offices or rooms tenanted or constructed or adapted to be tenanted by different persons the floors and principal staircases shall be of fire-resisting materials. But this provision shall not entitle the district surveyor to charge for the inspection of each set of chambers as a separate building."

By section 17 (2) of the new Act such chambers as these when "contained in one building shall not, although approached by distinct staircases or separate entrances from without, be deemed to be separate buildings, but all sets of chambers or offices or rooms tenanted or constructed or adapted to be tenanted by different persons shall, if contained in a building exceeding 20ft. in height and 8 squares in area, be separated vertically by walls or partitions and horizontally by floors and partitions and floors to be constructed of fire-resisting materials other than wood,* and if such separate sets of chambers or offices or rooms are contained in a building exceeding 25 squares in area the floors of the lobbies, corridors, passages and landings, and the principal staircases of such building, shall also be of fire-resisting materials."

By section 17 (3) "a district surveyor shall not be entitled to charge for the inspection of each such set of chambers or offices or rooms as a separate building."

By section 17 (4) no building containing separate sets of chambers or offices or rooms tenanted or constructed or adapted to be tenanted by different persons shall without the consent in writing of the Council extend to more than 50 squares in area.

The severity of the section is modified by the sub-sections 10 and 11, the former of which permits (except for the purpose of a party structure separating buildings) the use of wooden joists with concrete pugging at least 5in. thick for the construction of fire-resisting floors, while the second enacts that buildings commenced before the passing of this Act may be completed under the provisions of the Acts previously in force.

There is considerable ambiguity in section 17, particularly on account of the omission of commas.

Admirable as the object of these sections is, there can be little doubt that in some cases the imposition of all the conditions imposed by them would involve great expense and unnecessary hardship.

Projecting Shops.

Section 18 deals with the important case of a shop building the front of which projects beyond the main wall.

(1) Where such a part of a shop "erected, re-erected or re-constructed after the passing of this Act projects for a distance of 5ft. or more beyond the main front of any building of which it forms part, and in which building any persons are employed or sleep," the roof of such projecting portion is to be fire-resisting and at least 5in. thick, and an enclosed passage constructed of fire-resisting materials other than wood,* to the satisfaction of the district surveyor, is to be provided from the street to the staircase or other approach to the portion of the building other than that used as a shop, unless means of escape to the satisfaction of the Council be provided from the side rear or roof of the buildings.*

(2) Such passages are to be of a width according to the frontage of the building (excluding the return frontage of corner buildings). For a frontage not exceeding 20ft., the passage is to be at least 2ft. 6in. in clear width; for one exceeding 20ft. but not exceeding 30ft., 3ft.; and for one exceeding 30ft., 3ft. 6in.*

(3) If such frontage exceed 40ft. another staircase, and, if requisite, an enclosed passage as before, are to be provided for every 40ft. or part thereof beyond the first 40ft.

(4) Lantern lights not exceeding in area one-tenth that of such roof may be placed thereupon, but not nearer than 4ft. to the main front of the building, or within 4ft. of any other external or party wall. The sides of such lantern, except the front to the street, are to be carried up 2ft. above the roof, and every part of such lantern within 6ft. of the main front is to be fire-resisting. No part of such lantern is to project above the roof more than 4ft.

The provisions of this section are most desirable, but whether it is sufficiently severe to entirely render such a building capable of affording means of escape in all cases of fire is open to some little doubt.

No one is referred to as having authority to decide what materials may be used in the case of the roof, and this would seem to be more important than the passage.

Panelling.

Section 19 requires boarding or panelling, used as internal finishing to walls, &c., or ceilings to be hereafter fixed without any space, &c., between it and such walls, &c.; and the fixing of such boarding, &c., shall be a work under section 145 of the Act of 1894.

These provisions are salutary ones from other points of view than resistance to fire, *e.g.*, the standpoint of sanitation. The section 145 referred to is one requiring notice to be given to the district surveyor.

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* See preceding column.

* See preceding column.

Lift Shafts.

Section 20 requires the shaft of every lift, &c., hereafter constructed in a building (except in a dwelling-house occupied, &c., by not more than one family) to be constructed and enclosed to the satisfaction of the district surveyor, to whom in this case notice under section 145 of the Act 1894 is to be given.*

(*a*) The sides of the lift, &c., shaft throughout its height, the bottom, where the shaft does not extend to the foundation of the building, and the top, where similarly not to the roof, are all to be enclosed.

(*b*) Shafts of lifts, &c., within the well hole of any staircase may be enclosed with open metal grilles or guards and open metal doors, but otherwise all materials for enclosing shafts shall be solid fire-resisting materials (other than wood)† not less than 3in. thick. Doorways with fire-resisting doors may be constructed in such shafts.

No lift shall be constructed in, or communicate with, an enclosed staircase in any buildings of the warehouse class.

These provisions seem desirable.

Part 4 deals with Miscellaneous Matters.

Section 21 amends section 76 of the Act of 1894. This section 76 authorizes the Council "on the report of the superintending architect and of the chief officer of the fire brigade that additional cubical extent is necessary for any building to be used for trade or manufacture," and when the Council "are satisfied that proper arrangements have been or will be made and maintained for lessening so far as reasonably practicable danger from fire," to "consent to such building containing additional cubical extent." The building, however, is not to be more than 450,000 cub. ft. in extent, or less, if so allowed by the Council, unless divided by party walls, nor to exceed 60ft. in height, nor be used for a trade, &c., involving the use of explosive or inflammable materials.

The consent is only to continue while the conditions under which it was granted continue.

Section 21 of the new Act extends the Council's power under this section 76 by permitting them in giving any such consent to impose such conditions as they may think fit, and to require the maintenance, &c., to their satisfaction of provisions, &c., for lessening danger from fire, and a petty sessional court may order the owner to comply with such requirements.

This is a useful power, but it would be better vested in the hands of one expert, from whom there should be an appeal to such a tribunal as is mentioned in the third column of the preceding article.

Section 22 empowers an owner to enter buildings notwithstanding special terms of leases, to comply with sections 6, 8, 10, 12 and 21.

Section 23 empowers "any officer of the Council duly authorized by the Council in writing, and for the district surveyor to enter, inspect and examine at all reasonable times any building."

This power is a sweeping though possibly a necessary one. It might well provide for some short notices of entry being given.

Section 24 authorizes the district surveyor to receive fees under schedule 2. As in the Act of 1894, the fees will be based on the area of the whole building in which such work is to be done, and though the matter is indubitably one of some difficulty, a fairer and more uniform scale might be contrived and substituted. The increase of practically 10 per cent., as appears to be the case as regards new buildings, in the amount of the district surveyor's fees for inspection under the Bill is somewhat considerable.

Section 25 provides for the infliction of heavy penalties, not exceeding £21 and £5 daily, upon person contravening—

(*a*) Section 10, &c.

(*b*) Sections 6, 8, 12, and 21, as regards the maintenance, &c., of means of escape.

(*c*) Section 8, as regards change of conditions, &c.

(*d*) Order of petty sessional court under section 21, or refusing "to permit any officer of the Council or any district surveyor to enter, inspect and examine any building" as provided by section 23.

The liability to these penalties is to be without prejudice to any other proceedings, whether under this Act or otherwise, but so that no person shall be punished twice for the same offence.

Section 26 provides that where an offence for which the owner is liable to a penalty has been committed by an occupier or other person, the latter is to be liable to the same penalty as if he were the owner.

Where an owner is charged with any offence he may cause the actual offender to be brought before the court, and, if proper, convicted, when the owner is exempt.

Section 27 provides that where sections 6 and 7 are inconsistent with section 63 of the Act of 1894, the two former shall be deemed to be in substitution for section 63.

Section 28 requires the Council to bear the expenses of the Act.

Taken as a whole, the Bill is one whose general aim and purpose is most commendable and desirable; and if its promoters can see their way to so considerably modify its rigour as to permit it to become law in a much amended condition, it will assuredly be a beneficial enactment. As it stands at present it would destroy commercial confidence as regards new building operations; would involve the abandonment of many existing buildings; would cause to owners of property severe losses and heavy expenses, which would probably in some cases result in financial ruin; and altogether is so arbitrary, drastic and unreasonable that it would be quite an impossible Act.

The Bill was introduced in the House of Commons on Tuesday, February 24th, and read a first time.

Bricks and Mortar.

Aphorism for the Week.

Gothic is now like an old dress, which fitted a man well twenty years back, but must be altered to fit him now.—J. H. NEWMAN (1848).

Our Plates. FYVIE CASTLE, Aberdeenshire, owes its greatest architectural splendour to the Seton family—successors of the Meldrums—in the person of Alexander Seton, Lord Fyvie and Earl of Dunfermline. The great staircase adjoining the Gordon Tower is a fine example of Scottish work, and an admirable specimen of constructive skill. It was built by Lord Fyvie about 1600. The stair occupies a rectangular space with winding steps radiating from a massive stone newel about 1ft. 9in. in diameter. The steps are not generally in single stones, and next the stone newel they have upright mouldings shewing their section on plan—an indication of a late date. The construction of the staircase consists of a series of flat arches thrown between the newel and the outer walls, each successive arch, as the stair ascends, being straight angles to and some steps higher than the preceding one. The square spaces thus formed by these arches are vaulted so as to form the rests for the steps. The main arches spring from the round newel, where they have a wedge-shaped bracket, and on the wall side they rest on moulded imposts, with the Seton crest beneath and under this a shield charged with the Seton arms and those of the Earl's two wives. The stone newel of the great staircase terminates in a kind of carved Gothic finial, with the upper course having sloped sides and carved crockets. The drawing is by Mr. David Thomson, of Perth.—Some particulars of the Sweet Briar Institute, Virginia, are given on p. 35 of this issue.

Glasgow Municipal Buildings. MR. WILLIAM FORREST SALMON F.R.I.B.A., in addressing the students of the Glasgow Schoo of Art, said "art" was the result of man' efforts to attune his works into harmony with nature's works. Alluding to the Glasgow Municipal Buildings, he said the dayligh had to be supplemented by electric light becaught daylight had been sacrificed to the style of architecture chosen. The building was designed on the lines of an Italian palace, and, had it been erected in Italy, the clear atmosphere would have yielded sufficient daylight with the windows as they are. But for our atmosphere it was an unsuitable design. Man had failed by not giving sufficient regard to nature on the ethical o on the æsthetical side.

Restoration of Welbeck Abbey. THE work of restoring th Oxford wing of Welbeck Abbey, which was destroyed by fire about two years ago, has been so far proceeded with that it is expected to be ready fo occupation in the autumn. The external wall have been mostly preserved, while interes has been given to the long south front by two important projections with pediments. Th tiers of iron balconies have been removed On the east front, at the level of the uppe garden, a loggia with stone columns make a bold projection, and serves as a garden porch. The range of pseudo-Gothic gables which were incongruous above the larg sash window, has been removed, while a central feature of rusticated arches, ornamented by a pediment, has been formed. A somewhat similar feature has been designed by the architects, Messrs. Ernest George & Yeates, to form a centre to the west front together with a spacious porch, the latte having a bronze door and rich grilles o bronze. The roof has been covered with copper, and the walls built of the warm Anston stone, a local magnesian limestone On the central projections important group of statuary are being carved by Mr. A. Hodge The Duke of Portland has not, however confined the restoration to that part o Welbeck which suffered by the fire. Th house generally inside has undergone grea changes. With a redisposition of its room improvements have been effected in th corridors and in the lighting. By means o an arcaded screen, the Gothic room, whic once served as a library and later as a dining room, has been thrown into a spacious hal and this is receiving oak panelling 14f high, with a daïs at one end. The new dining-room, with its high-panelled wall and wagon ceiling, has a minstrel's galler at one end, and has been specially scheme to receive the Duke's superb Van Dyck whilst the large drawing-room is bein treated to bring it in harmony with its priceless Boucher tapestries. An important part o the new work is the group of rooms f the Duchess of Portland's own use. Th boudoir at the south-east angle has a coffere ceiling of walnut, with carving and gesso work, the other woodwork also being o walnut, the doors having delicate inlay The doorways and tall chimney-piece a of Istrian stone. The walls are hung wit silk. A feature in the dressing-room an alcove with a sunk marble bath with steps leading down, and marble surroundings.

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* See the second column of preceding article as to some other matters concerning him.

† See second column of this article.

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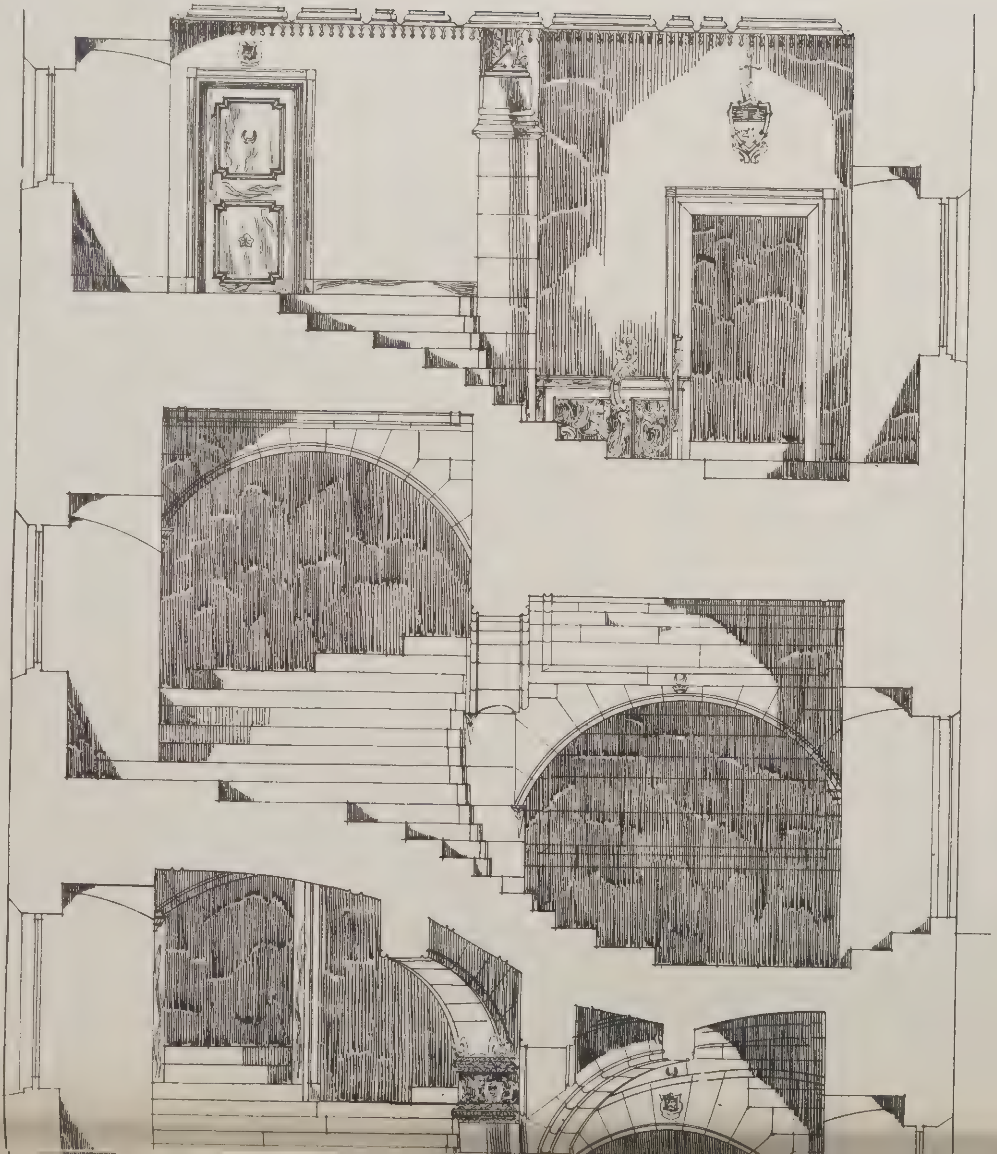
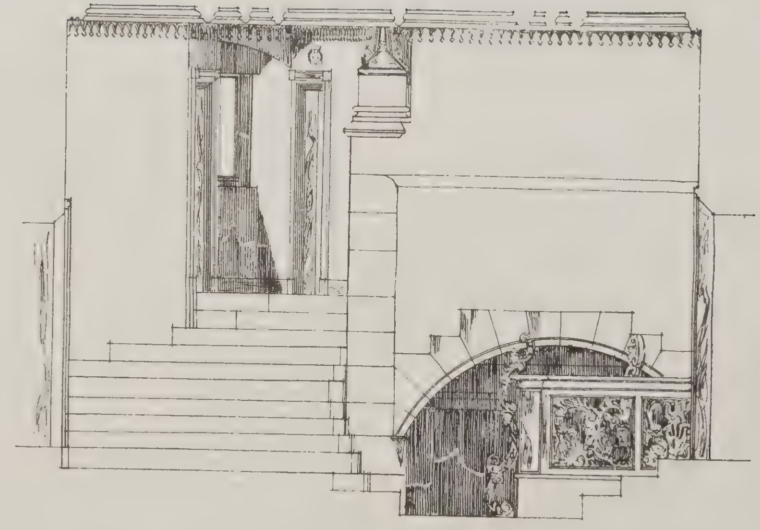
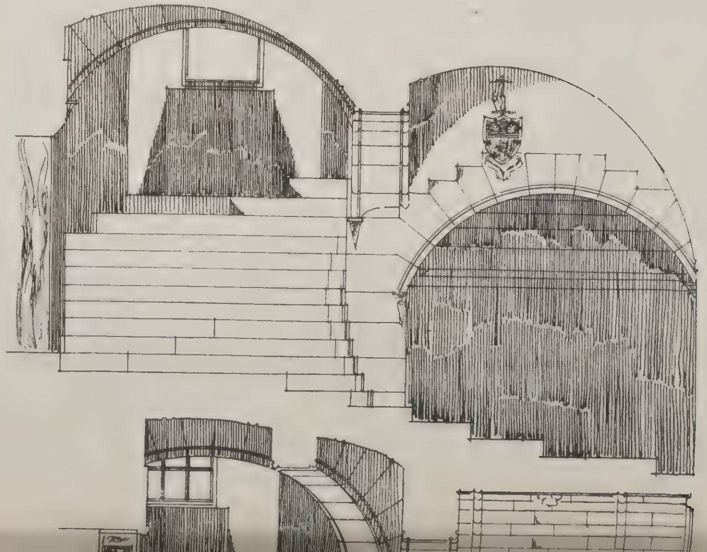
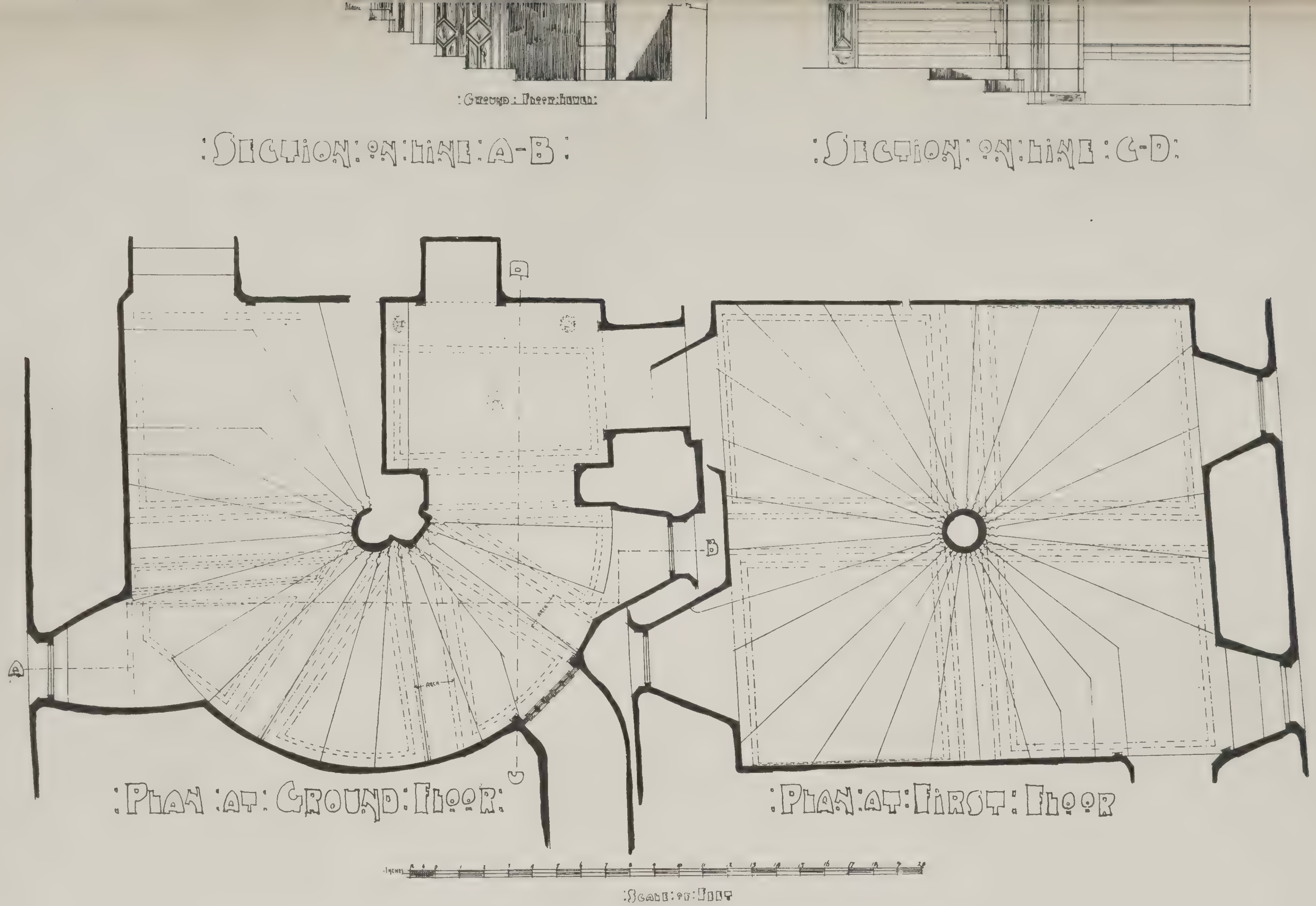
Wednesday, March 4th, 1903.









Fyvie Castle, Aberdeenshire: Main Staircase. Measured and Drawn by David Thomson.

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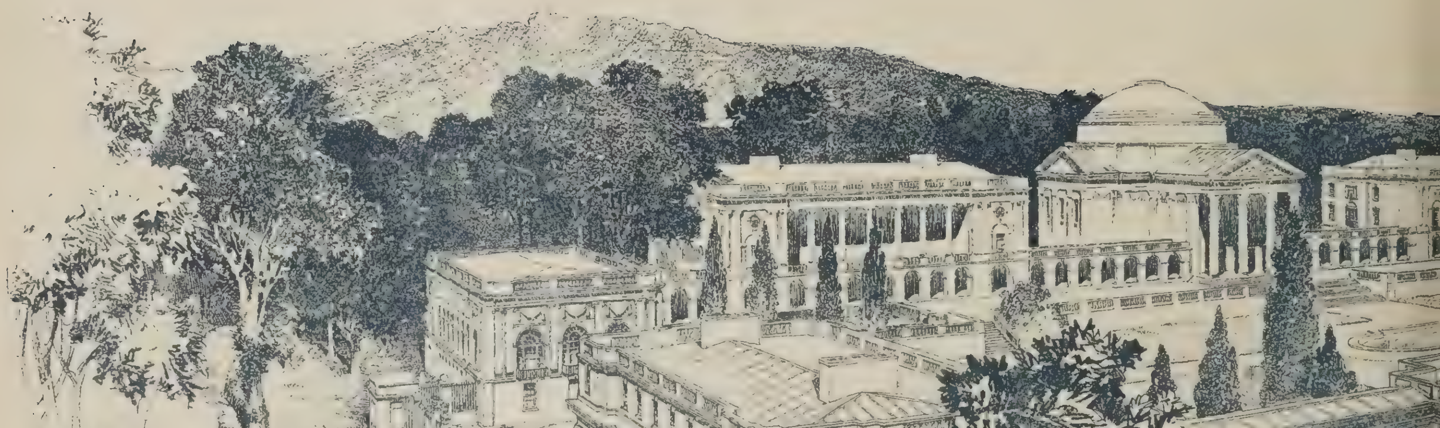

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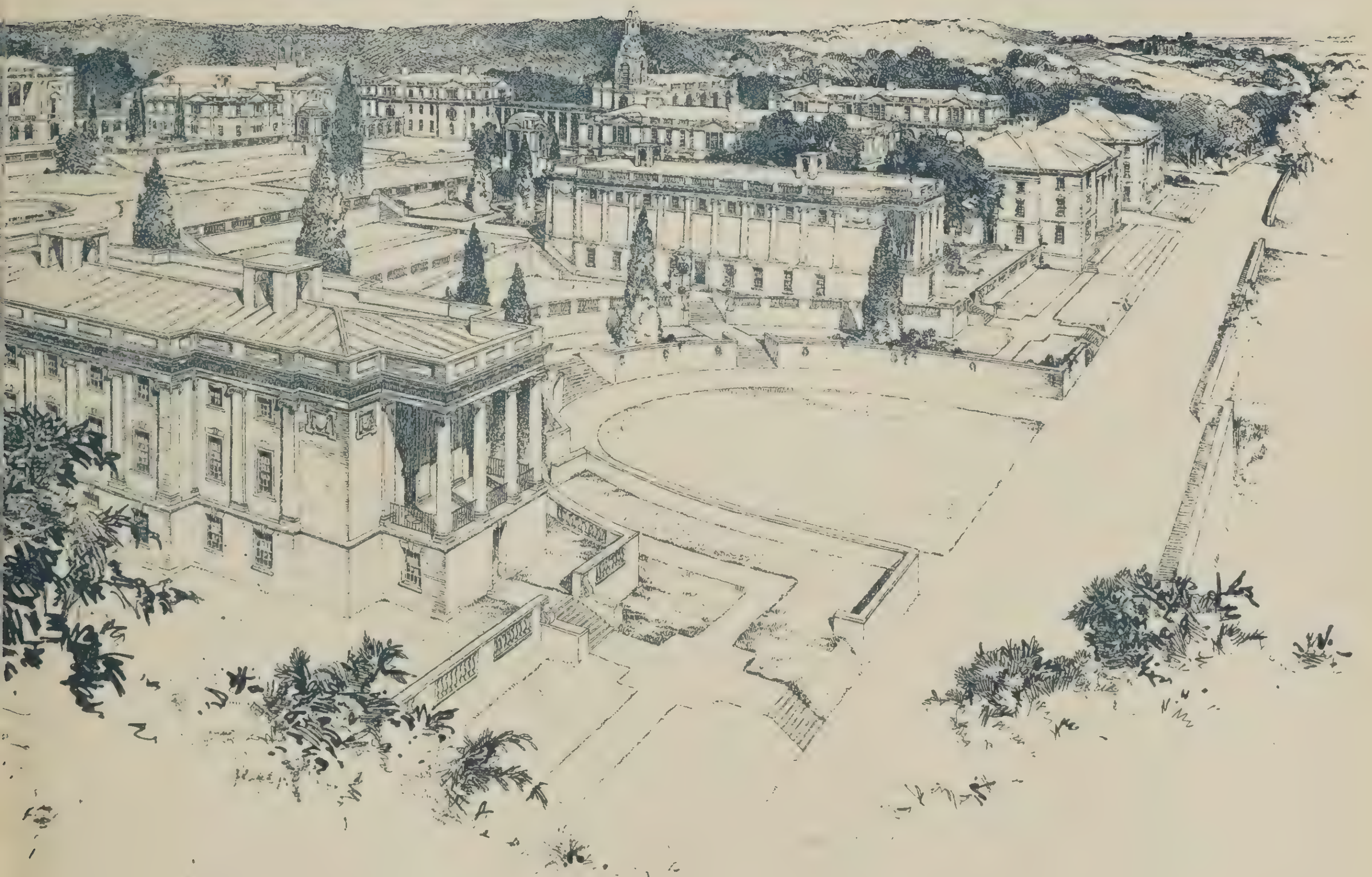

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Obituary.

Mr. A. J. Grice, builder, of Bacton, died last week at the age of forty-five years.

M. Lottin De Laval, the distinguished archeologist, has died in Paris at the age of ninety-hree years. He travelled extensively in Persia, and, as the result of his expeditions, presented the Louvre Museum with an interesting collection of Assyrian bas-reliefs and epigraphs.

Mr. Walter Scott, builder and contractor, of Eden Terrace, Sunderland, died last week at the age of eighty-three years. Mr. Scott had in the course of his long career a considerable experience in the construction of public buildings, and his work included the erection of a good number of churches.

Mr. James Smart, architect, of Perth, died last week at the age of fifty-six years. He was born in Alyth, and in early manhood went to Perth and joined Mr. David Smart, architect. About twenty years ago he started business in Perth on his own account as an architect, and of late years he carried through very successfully many important works in the renovation of various parts of the city. He had a good business both in the city and county of Perth. Mr. Smart was the architect of the Coupar Angus Town Hall and many other buildings. His latest work was the erection of St. John's Middle Parish Church manse in Glasgow Road.

The Death of Mr. Robert Lawson, architect, of Dunedin, New Zealand, is announced. Mr. Lawson, who went to the colony forty years ago, was born near Newburgh. As a youth he was articled as an architect to Mr. Heiton, of Perth, subsequently serving in the offices of Mr. Lessels, of Heriot Row, and Mr. Gillespie Graham, Edinburgh. At the age of twenty-two he determined to try his ortune as a colonist; and first in Victoria, New South Wales, and then in Dunedin, he gained much popularity by his skill as an ecclesiastical architect. In 1864 he secured the £100 first prize in an architectural competition covering Australia and New Zealand for he building of the "First Church," Dunedin. n all he was entrusted with nearly fifty large hurches, besides numerous other public and Government buildings.

Builders' Notes.

Building in Alnwick promises to be unusually brisk this summer.

Messrs. Abbott & Co., St. John's Studio, Chapel Street, Lancaster (London office: 18, Berners Street, W.), have issued a card showing specimens of their leaded-glass work. ome of the designs are very pleasing and the colourings harmonious.

A Form of Model General Conditions recommended by the Institution of Electrical Engineers for use in connection with contracts for plant, mains and apparatus for lectricity works has been published by Messrs. E. and F. N. Spon, Ltd., 125, Strand, London, W.C., price 1s.

French Fire Exhibits.—A deputation from the International Fire Exhibition has interiewed the French Minister of Commerce, the President and other officials of the French Fire ederation, who have been selected as a pecial Committee to ensure a fitting representation of France at the coming exhibition in London.

The Northern Plumbers' Strike. — The plumbers in the shipyards of the North-East oast, who have been on strike since the 9th of October against a reduction of wages 1s. per week, have accepted the employers' fer to allow the matter in dispute to be decided by arbitration. The plumbers will sume work pending the result of the arbitration.

The Blackpool Corporation New Stables are being ventilated by means of a number of patent Ridge ventilators, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

A Hill removed as Bricks.—"South African Exports" states that Messrs. Marshall, Sons & Co., Ltd, the well-known engineers of Gainsborough, in making extensive additions to their works, decided to level a small hill in the vicinity, and erect a large boiler shop about 400ft. long upon the site. When the excavation work was begun, it was found that the hill was mostly composed of clay. It was then resolved to make the bricks for the building on the spot. Accordingly, the hill has been gradually converted into bricks, which have been built up round the four sides, so that on the placing of the great glass roof, a portion of the original hill is still left inside the building to provide the last remaining bricks required for its completion.

Coming Events.

Wednesday, March 4.

EDINBURGH ARCHITECTURAL ASSOCIATION (Associates' Section).—Mr. James Gillespie on "Some Notes on Towers and Steeples," 8 p.m.

SURVEYORS' AND AUCTIONEERS' CLERKS' PROVIDENT ASSOCIATION.—General Meeting at Auction Mart at 7 p.m.

INSTITUTE OF SANITARY ENGINEERS, LTD.—Special Council Meeting at 7 p.m.

ROYAL ARCHÆOLOGICAL INSTITUTION.—Viscount Dillon on "Armour Notes," 4 p.m.

ARCHÆOLOGICAL ASSOCIATION.—Meeting at 8 p.m.

INSTITUTION OF CIVIL ENGINEERS. — Students' Visit to inspect the widening operations in progress on the London, Brighton and South Coast Railway, between Victoria Station and Clapham Junction, 2.20 p.m.

Thursday, March 5.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Technical Demonstration of Home Drainage, Plumbing, Sanitary Fittings, Heating and Hot Water, Water Mains and Service Pipes, Pumps and Hydraulic Rams, at Mr. William Baird's, 12 Lower Abbey Street, Dublin, 4 p.m.

CHEMICAL SOCIETY.—Meeting at 8 p.m.

GUILDHALL, E.C.—Meeting to oppose the London Building Acts (Amendment) Bill, 12 a.m.

JUNIOR ART WORKERS' GUILD.—Mr Cyril Davenport on "Bookbinding," 8 p.m.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.—Mr. R. W. A. Brewer on "The Production by means of Gas Producers and Engines," 8 p.m.

Friday, March 6.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Mr. James Lochhead on "Belgium: Commerce and Architecture," 8 p.m.

ARCHITECTURAL ASSOCIATION.—Messrs. H. B. Creswell and A. W. S. Cross on "Competitions," 7.30 p.m.

JUNIOR INSTITUTION OF ENGINEERS.—Mr. W. T. George on "Practical Notes on the Use and Maintenance of Electric Motors for Factory Purposes," 8 p.m.

ART WORKERS' GUILD.—Lecture on "Carpaccio," 8 p.m.

Saturday, March 7.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE SCIENTIFIC SOCIETY.—Mr. Joseph Menmuir on "Low-Pressure Switch Gear," 7.30 p.m.

BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Meeting at Carpenters' Hall at 6 p.m.

Monday, March. 9.

SURVEYORS' INSTITUTION. — Ordinary General Meeting at 8 p.m.

ROYAL PHILOSOPHICAL SOCIETY OF GLASGOW (Architectural Section).—Mr. Alexander Fisher on "Enamelling and Silversmithing," 8 p.m.

BRISTOL SOCIETY OF ARCHITECTS.—Mr. R. Stephen Ayling, F.R.I B.A., on "Public Abattoirs," 8 p.m.

Tuesday, March 10.

MANCHESTER SOCIETY OF ARCHITECTS (Students' Meeting).—Debate on "Should the Campanile of St. Mark's be Rebuilt, and should Restoration be Encouraged?"

Wednesday March 11.

ARCHITECTURAL ASSOCIATION (Discussion Section).—Paper on "Electric Lighting of a Small House," 7.30 p.m.

INSTITUTE OF SANITARY ENGINEERS. — Meetings of Examination and Literary Committee at 3.30 p.m., General Purposes and Finance Committee at 4.15 p.m., Election Committee at 5.15 p.m., and Members' Sessional Meeting at 7 p.m. Mr. L. Aglio Dibdin on "General Municipal Engineering."

SANITARY INSTITUTE.—Discussion on "Sewage Disposal and the Qualities essential in a Sewage Effluent," to be opened by Mr. George Reid, M.D., D.P.H., 8 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Mrs. Traquair on "Decoration," 8 p.m.

SOCIETY OF ARTS. — Mr. T. Brice Phillips on "Existing Laws, By-laws and Regulations relating to Protection from Fire, with Criticisms and Suggestions," 8 p.m.

JAPAN SOCIETY.—Mr. F. Yeats Edwards on "Some Features of Japanese Architecture," 8.30 p.m.

Current Market Prices.

FORAGE.

		£	s.	d.	£	s.	d.
Beans	per qr.	1	9	9	1	12	3
Clover, best	per load	4	10	0	5	0	0
Hay, best	do.	3	15	0	5	10	0
Sainfoin mixture	do.	3	15	0	4	5	0
Straw	do.	1	8	0	1	18	0

OILS AND PAINTS.

Castor Oil, French	per cwt.	1	1	0	1	2	2
Colza Oil, English	do.	1	4	3		—	
Copperas	per ton	2	2	6		—	
Lard Oil	per cwt.	2	13	0	2	14	0
Lead, white, groand, carbonate	do.	1	4	10		—	
Do. red	do.	1	0	4½			
Linseed Oil, barrels	do.	1	5	0		—	
Petroleum, American	per gal.	0	0	5⅝		—	
Do. Russian	do.	0	0	4¼	0	0	4⅜
Pitch	per barrel	0	7	0		—	
Shellac, orange	per cwt.	5	18	0	5	19	0
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Home Melt	per cwt.	1	10	3	1	11	0
Tar, Stockholm	per barrel	1	1	6		—	
Turpentine	per cwt.	2	3	9		—	

METALS.

Copper, sheet, strong	per ton	73	0	0		—	
Iron, Staffs., bar	do.	6	5	0	8	10	0
Do. Galvanised Corrugated sheet	do.	11	2	6	11	7	6
Lead, pig, Soft Foreign	do.	12	2	6	12	5	0
Do. do. English common brands	do.	12	7	6		—	
Do. pig, English 3lb. per sq. ft. and upwards	per ton	13	10	0		—	
Do. pipe	do.	14	0	0		—	
Nails, cut clasp, 3in. to 6in.	do.	9	5	0		—	
Do. floor brads	do.	9	0	0		—	
Steel, Staffs., Girders and Angles	do.	5	15	0	6	5	0
Do. do. Mild bars	do.	6	10	0	7	0	0
Tin, Foreign	do.	135	10	0	135	0	0
Do. English ingots	do.	135	0	0	136	10	0
Zinc, sheets, Silesian	do	24	0	0		—	
Do. do. Vieille Montaigne	do.	24	10	0		—	
Do. Spelter	do.	21	10	0	21	15	9

TIMBER.

SOFT WOODS.

Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow	do.	5	5	0	6	5	0
Do. Pitch	do.	3	0	0	3	4	0
Laths, log, Dantzic	per fath.	4	10	0	5	10	0
Do. Petersburg	do.	7	5	0		—	
Deals, Archangel, White—							
Do. 2nd, 3×9	per P.Std.	10	15	0		—	
Do. 3×7	do.	8	15	0		—	
Do. 3rd, 3×11	do.	9	10	0		—	
Do. 3×9	do.	9	15	0		—	
Do. Riga	do.	6	15	0	12	10	0
Do. Petersburg 1st Yellow	do.	10	10	0	11	5	0
Do. do. 3rd Yellow 3×11	do.	9	15	0		—	
Do. do. do. 3×7	do.	8	5	0		—	
Do. do. do. 2½×7	do.	8	15	0		—	
Do. do. 3rd White, 3×11	do.	8	15	0		—	
Do. do. do. 3×7	do.	7	15	0		—	
Do. Gefle, 1st and 2nd Yell. 3×11	do.	18	10	0		—	
Do. do. do. 4×9	do.	17	15	0		—	
Do. do. do. 3×9	do.	16	5	0		—	
Do. Onega, 3rd Yell. 3×9	do.	14	0	0		—	
Do. Mesane, 2nd White 3×9	do.	10	10	0		—	
Do. do. 3rd Dry Yellow, 3×9	do.	13	5	0		—	
Do. do. do. 2½×9	do.	12	10	0		—	
Do. Quebec Pine—2nd Bright Yell., 3×11	do.	18	0	0		—	
Do. do. do. 3×9	do.	14	0	0		—	
Do. do do. 3×7	do.	13	10	0		—	
Do. Montreal Yell. Pine, 1st, 3×11	do.	13	15	0		—	
Do. do. do. 2nd, 3×8	do.	15	0	0	16	0	0
Do. do. do. 3×7	do.	14	0	0		—	
Do. do. do. 4th, 3×11	do.	10	10	0	10	15	0
Do. Quebec, White Spruce—							
1st, 3×9	do.	12	10	0		—	
2nd, 3×9	do.	10	10	0		—	
Do. 3×7	do.	8	0	0		—	
3rd, 3×5	do.	7	0	0		—	
Do. 3×7	do.	9	15	0		—	
Battens, all kinds	do.	6	15	0	12	5	0
Flooring Boards 1in. prepared, 1st	per square	0	10	6		—	
Do. 2nd	do	0	9	0		—	
Do. 3rd &c.	do	0	8	3	0	9	0

HARD WOODS.

Ash, Quebec	per load	3	12	6		—	
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	15	0	0	20	0	0
Cedar, Cuba	per ft. sup.	0	0	5¼		—	
Do. Honduras	do.	0	0	$4\frac{5}{16}$		—	
Do. Tobasco	do.	0	0	$4\frac{13}{32}$		—	
Elm, Quebec	per load	4	0	0	5	2	6
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0	0	5¾		—	
Do. African	do.	0	0	$4\frac{13}{16}$	0	0	5½
Do. St. Domingo	do.	0	0	3¼	0	0	6
Do. Tobasco	do.	0	0	$4\frac{21}{32}$		—	
Do. Cuba	do.	0	0	$10\frac{19}{32}$		—	
Do. Lago	do.	0	0	$3\frac{15}{16}$	0	0	4⅞
Oak, Dantzic and Memel	per load	3	5	0	3	15	0
Do. Quebec	do.	6	5	0		10	0
Teak, Rangoon, planks	do.	16	0	0	17	10	0
Wainscot, Riga (Baulk)	do.	3	15	0	5	15	0
Walnut, Odessa Crown	do.	3	15	0	5	15	0
Do. American	per ft. cube	0	2	0		-	
Do. Lagos	per ft. sup.	0	0	$3\frac{19}{32}$		—	

Complete List of Contracts Open.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	BUILDING:		
March 5	Banff, Scotland—House	G. A. Cumming	C. W. Cosser, 1 Carmelite Street, Banff.
„ 5	Pwllheli, Wales—House, &c.	Gas and Water Corporation	J. Hunter, Architect, Pwllheli.
„ 5	Swindon—Brick, &c.	Corporation	H. J. Hamp, Borough Surveyor, Town Hall, Swindon.
„ 5	Stockton-on-Tees—Extension of Fever Hospital	Corporation	Borough Engineer, Town Hall, Stockton.
„ 5	Bristol—Warehouse	Pilkington Brothers, Ltd.	Oatley & Lawrence, Edinburgh Chbrs., Baldwin Street, Bristol.
„ 5	Hastings—Alterations, &c., to Workhouse	Union Guardians	A. W. Jeffery & Son, 5 Havelock Road, Hastings.
„ 6	Hull—Stands	Corporation	J. H. Hirst, City Architect, Town Hall, Hull.
„ 6	Eastbourne—Cottages	Union Guardians	S. G. Cooke, 2 Hyde Gardens, Eastbourne.
„ 6	Cockardie—Additions, &c., to House	——	Walker & Duncan, 3 Golden Square, Aberdeen.
„ 6	Halifax—Hotel	——	R. Horsfall & Son, 22A Commercial Street, Halifax.
„ 6	Londonderry—Church	——	M. A. Robinson, Architect, Richmond Street, Londonderry.
„ 6	Bassaleg, Mon.—Tower Restoration	——	C. B. Fowler, 6 High Street, Cardiff.
„ 6	Durham—Enlargement of Post Office	Commnrs. of H.M. Works, &c.	H.M. Office of Works, &c., Storey's Gate, S.W.
„ 6	Barking, Essex—Cement, Bricks, &c.	Urban District Council	H. Hargreaves, Clerk, Public Offices, Barking.
„ 6	Cardiff—Building Materials, &c.	Guardians	A J. Harris, Clerk, Queen's Chambers, Cardiff.
„ 6	Bristol—Bricks, Lime, &c.	Estates Department	City Valuer, Council House, Broad Street, Bristol.
„ 7	Accrington—Converting Sheds at Fish Market	——	W. J. Newton, Borough Engineer, Town Hall, Accrington.
„ 7	Clacton-on-Sea—School	School Board	T. H. Baker, Architect, Station Road, Clacton-on-Sea.
„ 7	Linlithgow—Hospital	Committee	J. Melvin & Son, Architects, Mar Street, Alloa.
„ 7	Oystermouth, Wales—Vicarage	Rev. H. Williams	E. M. B. Vaughan, Architect, Cardiff.
„ 7	Colchester—Bricks, &c	Roads & Drainage Committee	H. Goodyear, Borough Surveyor, Colchester
„ 7	London, E.—Bricks, Lime, Cement, &c.	Stepney Borough Council	M. W. Jameson, Borough Engineer, 15 Great Alie St., Whitechapel
„ 7	Chapel-en-le-Frith, near Stockport—Sick Wards, &c.	Union Guardians	Garlick & Flint, 5 Terrace Road, Buxton.
„ 7	Coatbridge, Scotland—Library	Town Council	W. Lyle, 16 St. John Street, Coatbridge.
„ 7	Edenderry—Eighteen Labourers' Cottages	District Council	T. H. F. Bor, Clerk, Boardroom, Edenderry.
„ 7	Manchester—Reconstructing Retort House	——	C. Nickson, Superintendent, Gas Dept., Town Hall, Manchester.
„ 7	Esker, Athenry, co. Galway—Monastery	Rev. A. Boylan	P. & D. W. Morris, 68 Harcourt Street, Dublin.
„ 9	Deer, Udney and Tarves—Houses and Cottages	——	Estate Office, Haddo House, Aberdeen
„ 9	Forres, Scotland—Church	——	J. Robertson, 39 Union Street, Inverness.
„ 9	Sedgley—Alterations to Schools	School Board	S. H. Eachus, Architect, Lichfield Street, Wolverhampton.
„ 9	Bolton—Cement, Bricks, &c.	Streets Committee	E. Ll. Morgan, Borough Surveyor, Town Hall, Bolton.
„ 9	Chatham, near Canterbury—School, &c.	School Board	G. Smith 34 Station Road, Canterbury.
„ 9	Kettering—Electric Light and Power Station, &c.	Urban District Council	J. Bond, Clerk, Market Street, Kettering.
„ 9	Kirkby Ireleth, Lancs—Bridge	Lancashire County Council	County Bridgemaster, Preston.
„ 9	Marsden, Yorks—Weaving Sheds, &c.	Crowther, Bruce & Co.	J. E. Lunn, Architect, Milnsbridge.
„ 9	Merthyr Tydfil—Alterations, &c. to Schools	School Board	J. Ll. Smith, 50 High Street, Merthyr Tydfil.
„ 9	Wisbech—Alterations, &c., to Workhouse	Guardians	F. B. Ward, 7 York Row, Wisbech.
„ 10	Brighton—Alterations, &c, to Laundry	Guardians	H. S. Reid, Parochial Offices, Brighton.
„ 10	Falkirk—Alterations, &c., to School	School Board	J. Strang, Architect, Vicar Street, Falkirk.
„ 10	London, W.—Baths, &c.	Kensington Borough Council	J. Taylor, Sons, & S. Crimp, 27 Gt. George St, Westminster, S.W
„ 10	London, N.W.—Offices	Hearts of Oak Benefit Society	M. C. Meaby, Jessel Chambers, 88-90 Chancery Lane, W.C.
„ 10	Letterkenny—Extension, &c, of Asylum	Donegal District Lunatic Asylum	J. P. M'Grath, Architect, Commercial Buildings, Foyle Street Londonderry.
„ 10	Swansea—Additions, &c., to School	School Board	G. E. T. Laurence, Architect, Chandos Chambers, Buckingham Street, Adelphi, W.C.
„ 10	Goole—Five Houses	——	T. E. Kettlewell, 74 Alexandra Street, Goole.
„ 11	Fulneck—Alterations, &c., to School	——	C. S. Nelson, 15 Park Row, Leeds.
„ 11	Cymmer, Porth—Club	Workmen's Club and Institute	E. Williams, Cymmer Workmen's Club and Institute, Porth.
„ 11	Higher Bebington—Extension of Victoria Hall	Urban District Council	Deacon & Horsburgh, Architects, Central Buildings, North John Street, Liverpool.
„ 11	Weymouth—Chimney Shaft, &c.	Corporation	Borough Engineer, Weymouth.
„ 11	Bocking, Essex—Alterations, &c., to Schools	——	J. W. Clark, Architect, Coggeshall, Essex.
„ 11	Bradford—Alterations, &c, to Schools	School Board	Board's Architect, Manor Row, Bradford.
„ 12	Ashford, Middlesex—Schoolrooms, &c.	West London School District Managers.	F. W. Roper, 9 Adam Street, Adelphi, W.C.
„ 12	Portsmouth—Portland Cement	——	J. Paton, Borough Surveyor, Portsmouth.
„ 12	Newport—Pumping Station Buildings	Alexandra Docks and Rly. Co.	Sir J. Wolfe Barry & Partners, 21 Delahay Street, Westminster.
„ 12	Wembley—Ventilating Council-Chamber, &c.	Urban District Council	W. Bagshaw, Clerk, Public Offices, Wembley
„ 12	Budleigh Salterton, Devon—Church, &c.	——	Batstone Brothers, 110 Cannon Street, London.
„ 12	Belfast—Fire Brigade Station	Police Committee	W. J. Hunter, Scottish Provident Buildings, Belfast.
„ 12	Monmouth—Alterations, &c., to Buildings	——	T. A. Williams, Clerk, Monmouth.
„ 13	Luddenden Foot, near Halifax—House	——	T. H. Tyson, Architect, Fountain Street, Halifax.
„ 14	London, N.—Alterations to Infirmary	St. Leonard's Guardians	F. J. Smith, Parliament Mansions, Victoria Street, S.W.
„ 14	Halifax—Cement, Ashlar, &c.	Corporation	W. M. Rogerson, Borough Elec. Engineer, Foundry St., Halifax.
„ 14	Eastbourne—Bricks, &c.	Town Council	Borough Engineer, Town Hall, Eastbourne.
	ENGINEERING:		
Mar. 5	Manchester—Electric Wiring	Electricity Committee	G. F. Metzger, Chief Engineer, Dickinson Street Station Manchester.
„ 5	Ghent—Electric Lighting	——	Town Hall, Ghent.
„ 5	London, E.C.—Buoys	Corporation of Trinity House	Secretary, Trinity House, E.C.
„ 5	Warrington—Gas Governors	Gas Committee	W. S. Haddock Gas Engineer, Warrington.
„ 6	Penzance Jetty	Highways Committee	F. Latham, Borough Engineer, Public Buildings, Penzance.
„ 6	Valletta, Malta—Carbons for Electric Light	——	Crown Agents for the Colonies, Downing Street, London.
„ 6	Bury, Lancs—Switchboard, &c.	Tramways Committee	Lacey, Clirehugh & Sillar, 78 King Street, Manchester.
„ 6	Portsmouth—Lancashire Boilers, &c.	Corporation	A. Hellard, Town Clerk, Town Hall, Portsmouth.
„ 6	Rangoon—Surface Condensers	Municipal Committee	Ogilvy, Gillanders & Co., 67 Cornhill, E.C.
„ 6	Rangoon—Economiser	Municipal Committee	Ogilvy, Gillanders & Co., 67 Cornhill, E.C.
„ 6	Cowes, Isle of Wight—Sinking Well, &c.	Urban District Council	W. Brown, 709 High Road, Tottenham, N.
„ 7	Armagh—Steam Rollers	County Council	R. H. Dorman, County Surveyor, Armagh.
„ 9	Brighton—Cables	Corporation	T. B. Holliday, Tramways Engineer, Lewes Road, Brighton.
„ 9	Kilbirnie, Scotland—Reservoir	County Council	W. R. Copland, 146 West Regent Street, Glasgow.
„ 9	Pemberton, Lancs—Light Railway	Urban District Council	Heaton, Ralph & Heaton, Civil Engineers, Wigan.
„ 9	Bristol—Wharf Wall, &c.	Docks Committee	W. W. Squire, Underfall Yard, Cumberland Road, Bristol.
„ 10	India Office, S.W.—Bogie Carriages	——	Director General of Stores, India Office, Whitehall, S.W.
„ 10	Grimsby—Wiring, &c.	School Board	W. A. Vignoles, Corporation Electricity Works, Grimsby.
„ 10	London, S.W.—Dynamo	Battersea Borough Council	H. R. F. Mackay, Electricity Department, Lombard Road, Battersea, S.W.
„ 10	Banbury—Alterations, &c., to Heating Apparatus	Guardians	Master, Workhouse, Banbury.
„ 10	Hayfield—Water Supply Works	Rural District Council	G. & F. W. Hodson, Spring Villas, New Mills, near Stockport.
„ 16	Bilston—Wiring, &c.	Urban District Council	J. P. Wakeford, Engineer, Town Hall, Bilston.
„ 16	Brigg, Lincs—Sluice Doors	Drainage, &c., Commissioners	A. Atkinson, Engineer, Brigg.
„ 16	Bristol—Wharf	Docks Committee	W. W. Squire, Underfall Yard, Cumberland Road, Bristol.
	FURNITURE:		
March 6	Dartford—Blinds	Metropolitan Asylums Board	T. D Mann, Clerk, Board's Offices, Embankment, E.C.
„ 18	Canterbury—School Furniture	School Board	H. Fielding, 15 Bexgate Street, Canterbury.
„ 18	Croydon—Furniture for Hospital	Lunacy Visiting Committee	A. C. Gower, Clerk, Town Hall, Croydon.
	IRON AND STEEL:		
Mar. 5	Swindon—Ironmongery, Iron Castings, &c.	Corporation	H. J. Hamp, Borough Surveyor, Town Hall, Swindon.
„ 5	Manchester—Steel Girders	Gas Committee	J. G. Newbigging, Rochdale Road Station, Manchester.
„ 6	Barking, Essex—Castings, &c.	Urban District Council	H. Hargreaves, Clerk, Public Offices, Barking.
„ 6	Cardiff—Ironmongery, &c.	Guardians	A. J. Harris, Clerk, Queen's Chambers, Cardiff.
„ 6	Bristol—Ironmongery, &c.	Estates Department	City Valuer, Council House, Broad Street, Bristol.
„ 6	Egremont, Cheshire—Stores	Wallasey U.D.C.	W. H. Travers, Surveyor, Public Offices, Egremont, Cheshire.
„ 7	Colchester—Ironmongery, Founders' Work, &c.	Roads and Drainage Committee	H. Goodyear, Borough Surveyor, Town Hall, Colchester.
„ 7	London, E.—Cast-iron Work, &c.	Stepney Borough Council	M. W. Jameson, 15 Great Alie Street, Whitechapel, E.
„ 9	London, S.W.—Ironmongery, &c.	Barnes Urban District Council	G. B. Tomes, Surveyor, Council Offices, High Street, Mortlake.
„ 9	Preston—Cast-iron Pipes, Castings, &c.	Corporation	Borough Surveyor, Town Hall, Preston.
„ 9	Twickenham—Castings	Urban District Council	F. W. Pearce, Surveyor, Town Hall, Twickenham.
„ 9	Bolton—Cast and Wrought Ironwork, &c.	Streets Committee	E. Ll. Morgan, Borough Surveyor, Town Hall, Bolton
„ 10	Tyburn, near Birmingham—Iron, Steel and Hardware	Drainage Board	J. D. Watson, Drainage Board Offices, Tyburn near Birmingham.
„ 10	Bromley, Kent—Ironfounder's Work, &c.	Urban District Council	F. H. Norman, Clerk, District Council Offices, Bromley, Kent.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
		IRON AND STEEL—*cont.*		
March	10	London, E.C.—Sewer Ironwork, &c.	Shoreditch Borough Council	H. M. Robinson, Town Clerk, Shoreditch Town Hall, Old Street, E.C.
"	11	Amsterdam—Railway Stores	Minister for the Colonies	Mart. Nijhoff, The Hague.
"	11	South Shields—Cast Ironwork, &c.	Corporation	S. E. Burgess, Borough Surveyor, Chapter Row, South Shields.
"	14	Eastbourne—Cast and Wrought-iron Goods, &c.	Town Council	Borough Engineer, Town Hall, Eastbourne.
"	14	Bury, Lancs—Stores	Gas Committee	H. Simmonds, Engineer. Gasworks. Bury.
"	14	Halifax—Materials and Stores	Corporation	J. Lord, Borough Engineer, Town Hall, Halifax.
"	18	Reading—Stores	Corporation	J. Bowen, Borough Engineer, Town Hall, Reading.
"	20	Brazil—Iron and Steel	Central Railway	Commercial Intelligence Branch of Board of Trade, 50 Parliamen Street, S.W.
June	15	Bangkok, Siam—Permanent-way Materials	Royal Siamese State Railways	Director-General Gehots, Bangkok.
"	15	Bangkok, Siam—Railway Stores	Royal Siamese State Railways	Siamese Legation, London.
		PAINTING AND PLUMBING:		
March	5	Swindon—Oils, Paints, &c.	Corporation	H. J. Hamp, Borough Surveyor, Town Hall, Swindon.
"	6	Cardiff—Oils and Paints, Glass and Glazing	Guardians	A. J. Harris, Clerk, Queen's Chambers, Cardiff.
"	7	London. E.—Colours, Varnishes, Oils, &c.	Stepney Borough Council	M. W. Jameson, 15 Great Alie Street, Whitechapel, E.
"	9	Leeds—Paintings, &c., Hospitals	—	City Engineer, Leeds.
"	9	London, W.—Painting, &c., at Infirmary	St. Marylebone Guardians	H. T. Dudman, Clerk, Northumberland St., Marylebone Rd., W.
"	9	Preston—Oil. Lead, Paints, &c.	Corporation	Borough Surveyor, Town Hall, Preston.
"	10	Tyburn, near Birmingham—Oils, Paints, &c.	Drainage Board	J. D. Watson, Engineer, Drainage Board Offices, Tyburn, near Birmingham.
"	10	Bromley, Kent—Oils, Paints, &c.	Urban District Council	F. H. Norman, Clerk, District Council Offices, Bromley, Kent.
"	10	London, E.C.—Plumbers' Work, &c.	Shoreditch Borough Council	H. M. Robinson, Town Clerk, Shoreditch Town Hall, Old St.
"	11	South Shields—Ironwork	Corporation	S. E. Burgess, Borough Surveyor, Chapter Row, South Shields.
"	14	Halifax—Oils, Paints, &c.	Corporation	J. Lord, Borough Engineer, Town Hall, Halifax.
"	14	Bury, Lancs—Oils, White and Red Lead, &c.	Gas Committee	H. Simmonds, Engineer, Gasworks, Bury.
"	14	Eastbourne—Oils and Colours, &c.	Corporation	Borough Engineer, Town Hall, Eastbourne.
"	16	Warrington—Oils, Paints, Brushes, &c.	—	H. Ellis, Clerk, County Asylum, Winwick, Warrington.
"	18	Reading—Oils, Paint, &c.	Corporation	J. Bowen, Borough Surveyor, Town Hall, Reading.
		ROADS AND CARTAGE:		
March	5	Claydon—Granite, &c.	Rural District Council	J. S. Macgregor, Surveyor, Coddenham.
"	5	Swindon—Materials, &c.	Corporation	H. J. Hamp, Borough Surveyor, Town Hall, Swindon.
"	5	London, S.E.—Vans	Lambeth Borough Council	H. Edwards, Borough Engineer, Town Hall, Kennington Green, S.E.
"	5	New Brompton, Kent—Cement, Carting, Ballast, &c.	Gillingham U.D.C.	F. C. Boncher, Clerk, Gardiner Street, New Brompton.
"	6	Barking, Essex—Materials	Urban District Council	H. Hargreaves, Clerk. Public Offices, Barking.
"	6	Pontefract—Road Material	Rural District Council	W. A. Glover. Clerk, Union Offices, Pontefract.
"	6	Withington, Lancs—Materials, &c.	Urban District Council	A. H. Mountain, Surveyor, Town Hall, Withington Manchester.
"	6	Egremont. Cheshire—Materials	Wallasey U.D.C.	W. H. Travers, District Surv., Public Offices Egremont, Cheshire.
"	6	Old Hill, Staffs—Stone	Rowley Regis U.D.C.	D. Wright, Clerk, Council Offices, Old Hill, Staffs.
"	7	Worcester—Road Stone and Slag	County Council	H. Garrett, County Road Surveyor, Shire Hall, Worcester.
"	7	Northampton—Granite, &c.	County Council	C. S. Morris, County Surveyor, County Hall, Northampton.
"	7	Rotherham—Materials	Rural District Council	R. Bradbury, 29B High Street, Rotherham.
"	7	Rugby—Granite, &c.	Rural District Council	J. W. Pendred. Clerk, Rugby.
"	7	Tenterden, Kent—Quartzite	Town Council	W. L. C. Turner, Borough Surveyor, Tenterden.
"	7	Erpingham—Materials	Rural District Council	R. Mann, District Surveyor, Cromer Road, Holt.
"	7	Billesdon, Leics—Granite	Rural District Council	W. E. Richardson, 18 New Street, Leicester.
"	7	Cardiff—Roads, &c.	Union Guardians	E. Seward, Architect, Queen's Chambers, Cardiff.
"	7	Leeds—Cartage and Materials	Sanitary Committee	G. Darley, Superintendent, Dock Street Depôt, Leeds
"	7	Aber Bargoed and Pengam, Wales—Road	Bedwellty U.D.C.	J. H. Lewis, Surveyor, Blackwood, Mon.
"	7	Colchester—Road Materials, &c.	Roads and Drainage Committee	H. Goodyear, Borough Surveyor, Town Hall, Colchester.
"	7	Walton-on-Thames—Materials, &c.	Urban District Council	C. J. Jenkin, Surveyor, Council Offices, Walton-on-Thames.
"	9	Beccles, Suffolk—Materials	Wangford R.D.C.	F. S. Rix, Clerk, Beccles.
"	9	Folkestone—Materials, &c.	Corporation	A. E. Nichols, Borough Surveyor, Corporation Offices, Folkestone.
"	9	Batley, Yorks—Materials	Town Council	O. J. Kirby, Borough Surveyor, Market Place, Batley.
"	9	London, S.W.—Materials and Cartage	Barnes U.D.D.	G. B. Tomes, Surveyor, Council Offices, High St., Mortlake, S.W
"	9	Bradfield, Berks—Road Repair	Rural District Council	J. Foorester, District Surveyor, Theale near Reading.
"	9	Erith, Kent—Materials, &c.	Urban District Council	C. H. Fry, Clerk, Bexley Road Erith, Kent.
"	9	Bolton—Materials	Streets Committee	E. Ll. Morgan, Borough Surveyor, Town Hall, Bolton.
"	9	Twickenham—Materials	Urban District Council	F. W. Pearce, Surveyor, Town Hall, Twickenham.
"	10	Shoreham, Sussex—Flints	Steyning East R.D.C.	E. Cripps, Clerk, Council Offices. Ham Road, Shoreham.
"	10	Croydon—Road Repair	Town Council	Borough Road Surveyor, Town Hall, Croydon.
"	10	Dover—Street Improvements	Town Council	H. E. Stilgoe, Borough Engineer, Maison Dieu House, Dover.
"	10	Faversham—Flints	Rural District Council	J. G. Chittenden, District Surveyor, Ashford Road, Faversham.
"	10	Bromley, Kent—Materials	Urban District Council	F. H. Norman, Clerk, District Council Offices, Bromley, Kent.
"	10	London, E.C.—Materials	Shoreditch Borough Council	H. M. Robinson, Clerk, Shoreditch Town Hall, Old Street, E.C
"	11	Bexley, Kent—Materials	Urban District Council	W. T. Howse, Surveyor, Public Hall, Bexley.
"	11	Ely—Granite and Gravel	Rural District Council	E. R. Ennals, District Surveyor, Downham Lane, Ely.
"	11	Rishton, Lancs—Materials, &c.	Urban District Council	J. J. Adams, 4 Church Street, Rishton.
"	11	South Shields—Materials	Corporation	S. E. Burgess, Borough Surveyor, Chapter Row, South Shields.
"	11	Glasgow—Whinstone	—	H. Hutcheson, 115 Wellington Street, Glasgow.
"	11	Bingham. Notts—Materials	Rural District Council	R. H. Beaumont, Clerk, Market Street, Bingham.
"	11	London, S.W.—Hoggin, &c.	Chelsea Borough Council	T. W. E. Higgens, Borough Surveyor, Town Hall. King's Road, Chelsea, S.W.
"	13	Chelmsford—Materials, &c.	Rural District Council	H. G. Warne, Surveyor, Avenue Chmbrs., Market Rd., Chelmsford.
"	14	Mitcham—Cartage, &c.	Croydon R.D.C.	E. J. Gowen, Clerk. District Council Offices, Town Hall, Croydon.
"	14	Burnley—Materials	Rural District Council	S. Edmondson, 18 Nicholas Street, Burnley.
"	14	Halifax—Materials, &c.	Corporation	J. Lord, Borough Engineer. Town Hall, Halifax.
"	16	Eccles. Lancs—Materials	Corporation	T. S. Picton, Borough Surveyor, Town Hall, Eccles, Lancs.
"	16	Abergavenny—Materials, &c.	Rural District Council	J. Gill, 4 Brecon Road, Abergavenny.
"	18	Reading—Materials	Corporation	J. Bowen, Borough Surveyor, Town Hall, Reading.
"	21	Hoylake—Materials	Urban District Council	L. G. Dashper, Surveyor, Council Offices, Hoylake.
"	31	Dartford—Kerbing, &c.	Urban District Council	W. Harston, 8 Hythe Street, Dartford,
		SANITARY:		
March	5	Swindon—Pipes, Lime, Disinfectants, &c.	Corporation	H. J. Hamp, Borough Surveyor, Town Hall. Swindon.
"	5	Blaydon-on-Tyne—Scavenging	Urban District Council	R. Biggins, Sanitary Inspector, Council Offices, Blaydon-on-Tyne.
"	5	Dawlish—Relaying Drain	Urban District Council	R. Clarke, Surveyor, Sandringham House, Brunswick Place Dawlish.
"	5	Pocklington. Yorks—Sewerage Works	—	Surveyor, Packlington.
"	5	Windsor—Drainage Works	Town Council	Borough Surveyor. Alma Road, Windsor.
"	6	Barking, Essex—Drain Pipes, Gulleys, &c	Urban District Council	H. Hargreaves, Clerk, Public Offices, Barking.
"	6	Bristol—Drain Pipes, &c.	Estates Department	City Valuer, Council House, Broad Streeet, Bristol.
"	6	Penzance—Removal of Refuse, &c.	—	F. Latham, Borough Surveyor, Penzance.
"	6	Skipton—Sewerage and Sewage-Disposal Works	Rural District Council	H. A. Johnson, 15 The Exchange, Bradford.
"	6	Egremont, Cheshire—Pipes Gulleys, Disinfectants, Lime, &c.	Wallasey U.D.C.	W. H. Travers. District Surv., Public Offices, Egremont. Cheshire.
"	7	Colchester—Removal of Refuse, &c.	Roads and Drainage Committee	H. Goodyear, Borough Surveyor, Town Hall, Colchester.
"	7	Rotherham—Disinfectants	Rural District Council	Oxley & Coward, 6 Westgate, Rotherham.
"	7	Rotherham—Removal of Nightsoil	Rural District Council	B. Hey, 29B High Street, Rotherham.
"	7	Worcester—Sewage Disposal Works	Corporation	Beesley. Son & Nicholls, 11 Victoria Street, Westminster, S W.
"	7	Colchester—Lime	Roads and Drainage Committee	H. Goodyear, Borough Surveyor, Town Hall. Colchester.
"	7	Walton-on-Thames—Pipes, Disinfectants, &c.	Urban District Council	C. J. Jenkins. Surveyor. Council Offices. Walton-on-Thames.
"	9	Batley, Yorks—Sanitary Tubes	Town Council	O. J. Kirby, Borough Surveyor, Market Place, Batley.
"	9	Hutton, Essex—Sewer	Billericay R.D.C.	S. J. Shelley, Junction Road, Brentwood.
"	9	Bolton—Pipes, &c.	Streets Committee	E. Ll. Morgan, Borough Surveyor, Town Hall, Bolton.
"	9	Preston—Pipes, &c.	Corporation	Borough Surveyor, Town Hall, Preston.
"	9	Twickenham—Drain Pipes and Gulleys, &c.	Urban District Council	F. W. Pearce, Surveyor, Town Hall, Twickenham.
"	10	Tyburn, near Birmingham—Pipes, &c.	Drainage Board	J. D. Watson, Engineer, Drainage Board Offices, Tyburn, near Birmingham.
"	10	London. E.C.—Drain Pipes, &c.	Shoreditch Borough Council	H. M. Robinson. Town Clerk, Shoreditch Town Hall, Old St., E.C
"	10	Bromley, Kent—Drain Pipes. &c.	Urban District Council	F. H. Norman, Clerk, District Council Offices, Bromley, Kent.
"	11	Bexley, Kent—Pipes, Disinfectants, &c.	Urban District Council	W. T. House, Surveyor, Public Hall, Bexley Heath.
"	11	South Shields—Disinfectants, Pipes, &c.	Corporation	S. E. Burgess. Borough Surveyor, Chapter Row, South Shields.
"	14	Eastbourne—Pipes, Junctions, &c.	Town Council	D. J. Bowe, Acting Borough Engineer, Town Hall, Eastbourne.
"	14	Burnley—Earthenware Pipes, Disinfectants, &c.	Rural District Council	S. Edmondson, 18 Nicholas Street, Burnley.

Complete List of Contracts Open —*continued*

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
		TIMBER:		
March	5	Swindon—Timber	Corporation	H. J. Hamp. Borough Surveyor, Town Hall, Swindon.
"	6	Egremont, Cheshire—Timber	Wallasey U.D.C.	W. H. Travers, District Engineer, Public Offices, Egremont.
"	6	Bristol—Timber	Estates Department	City Valuer, Council House, Broad Street, Bristol.
"	7	London, E.—Timber	Stepney Borough Council	M. W. Jameson, Borough Engnr., 15 Great Alie St., Whitechapel, E.
"	9	Madrid—Telegraph Poles	——	Direction General de Correos y Telégrafos, Madrid.
"	10	Tyburn, near Birmingham—Timber	Drainage Board	J. D. Watson, Engineer, Drainage Board Offices, Tyburn, near Birmingham.
"	10	London, E.C.—Timber	Shoreditch Borough Council	H. M. Robinson. Town Clerk, Shoreditch Town Hall. Old St., E C.
"	11	South Shields—Timber	Corporation	S. E. Burgess, Borough Engineer, Chapter Row, South Shields.

List of Competitions Open.

DATE OF DELIVERY.		DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
March	15	Hull—Soldiers' Memorial	——	——	E. Laverack, Town Clerk, Town Hall, Hull.
"	31	Hull—Extension of Town Hall	£300, £200, £100.	£5.	E. Laverack, Town Clerk. Town Hall, Hull.
"	31	Castleford. Yorkshire—Public Library	£15, £10.	——	H. A. Broadbent, Clerk to Urban District Council, Castleford, Yorkshire.
"	31	Chelmsford—Infectious Diseases Hospital	£25, £10.	£1.	A. S. Duffield, 96 High Street, Chelmsford.
April	10	Yeovil—Laying-out Land for Town Hall, Municipal Buildings, Markets, &c.	£21, £10 10s.	——	Borough Surveyor, Yeovil.
"	14	Blackpool—Technical Schools	£60, £25, £5.	£1 1s.	J. S. Brodie. Borough Surveyor, Town Hall, Blackpool.
"	30	Fenton, Staffs—Library	£60, £30.	£1 1s.	S A. Goodall, Surveyor, Town Hall, Fenton, Staffs.
"	30	Sunderland—Alterations to Hall	£100, £50, £25.	£ .	J. W. Moncur, Borough Engineer, Town Hall, Sunderland.

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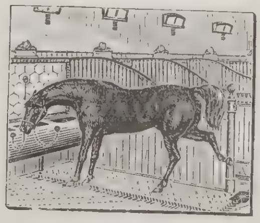

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GAS AND WATER
SCHEMES.

THE COUNCILS JOURNAL.
MONTHLY, SIXPENCE.

The Councils Journal, the organ of the Parish and District Councils Association, circulates amongst members and officials of Town, District and Parish Councils, Boards of Guardians, School Boards, &c., &c., and publishes a monthly column, "The Work of the Councils," giving information as to Building Works, Sewerage, Gas and Water Schemes proposed by local bodies.

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Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

Farnham (Surrey).—For the erection of a house at Farnham, Surrey Messrs. Clare & Ross, architects, 1 West Street, Finsbury Circus, E.C., and Chelmsford. Quantities by Mr. H. M. Messenger, 16 Great George Street, Westminster, S.W.:—

Goddard & Sons, Farnham	£1.334
J. Harris & Son, Woking	1,293
A. G. Mardon, Farnham	1,260
Tompsett & Co., Farnham	1,168
H. Roffey,* Putney, S.W.	1,124

* Accepted.

London, N.—For the execution of the following works in the district, for the Finchley Urban District Council: (1) Construction of about 15,800ft. of 9in, 12in., 15in. and 18in. pipe and 160ft. brick surface-water sewers, with manholes, &c.; (2) construction of about 8,000ft of 9in. and 12in. soil sewers, railway crossings, manholes, &c.; (3) construction of about 600ft. run of 5ft. brick surface-water culvert with side entrances, &c., at Coppetts Road, to the north of Muswell Hill; (4) supplying and fixing of about 1.200ft. run of wrought-iron railings and entrance gates in Coppetts Road. Mr. Francis Smythe, engineer:—

Surface-water sewers.

J. A. Dunmore	£7,048	16	10
Griffiths & Co., Ltd.	5,917	16	10
T. Adams	5,752	12	0
Killingback & Co.	5,488	9	6
R. Ballard, Ltd.	5,453	0	0
Grounds & Newton	5,408	3	6
M S. Kitteringham	4,989	8	3
Johnson & Langley	4.861	0	0
C. Ford	4,765	0	0
Cook & Co.	4,723	6	0
G Bell	4,500	4	4
J. Jackson*	4,228	18	11

Soil sewers.

R. Ballard, Ltd.	£4,497	0	0
M. S. Kitteringham	4,329	0	0
J A. Dunmore	4,229	8	4
C. Ford	4,154	0	0
T. Adams	4,025	2	2
Grounds & Newton	4,041	12	3
Killingback & Co.	3,545	17	8
G. Bell	3,413	18	10
Johnson & Langley	3,378	0	0
Cook & Co.*	3,258	4	4

Culvert.

Paterson	£2,700	0	0
Killingback & Co.	2,381	9	9
T. Adams	2,296	6	9
J. A. Dunmore	2,266	0	0
Cook & Co.	2,026	0	0
G. Bell	2,000	0	0
R. Ballard, Ltd.*	1,697	0	0
C. Ford	1,640	0	0
Johnson & Langley	1,548	0	0

Railings.	Per yd.		
Motley & Green	£0	16	9
B. Oram	0	16	6
Longfield & Co.	0	15	9
Dudley, Metal & Co.	0	11	9
Bolton & Paul, Ltd.	0	11	6
Grounds & Newton	0	11	3
Rubery & Son	0	11	0
Raybould & Co.	0	9	6
Bayliss, Jones & Co.	0	9	3
Elwell*	0	9	0

Gates.	Per pair.	
Motley & Green	£15	6
Bolton & Paul, Ltd.	11	15
B. Oram	10	10
Grounds & Newton	9	15
Longfield & Co.	9	0
Dudley, Metal & Co.	7	15
Rubery & Son	7	10
Elwell*	7	0
Raybould & Co.	6	15
Bayliss, Jones & Co.	6	10

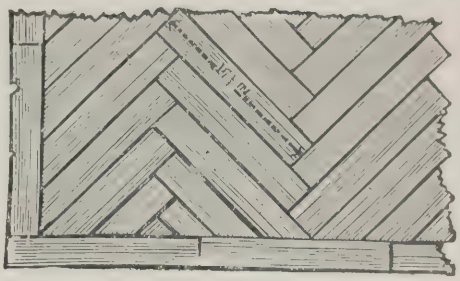
* Accepted.

London.—For supply and fixing of wrought-iron fencing and gates at the Joyce Green Hospital, for the Metropolitan Asylums Board:—

Motley & Green, Ltd., Leeds	£3,526	16	0
W. Hayward & Sons, Ltd., Wolverhampton	2,370	0	0
Wenham & Walters, Ltd, Croydon	2,352	0	0
D. Rowell, Westminster	2,199	10	0
Bayliss, Jones & Bayliss, Ltd., London, E.C.	2,156	11	3
J. Priest & Son, Ltd., Bristol	2,100	0	0
Rowland Brothers, Fenny Stratford, Bucks	2,047	0	0
F. Morton & Co., Ltd., Garston, Liverpool	1,950	0	0
M. Webb, Stoke Newington, N.	1,867	9	9
Hill & Smith, Brierley Hill, Staffs	1,860	16	0
Dudley Art Metal Co., Ltd, Dudley.	1,840	5	0
W. Bain & Co., London, E.C.	1.798	10	10
W. Miller & Sons, Wolverhampton.	1,798	0	0
E. J. Rayboult & Co., Ltd, Workington	1,697	10	10
J. Elwell, Birmingham	1,682	7	6
B. C. Barton, Birmingham	1,660	0	0
A. E. Wood,* Arabin Ironworks, Brockley, S.E.	1,535	10	0

* Accepted. [Architect's estimate, £2,209.]

FLOORING BLOCKS



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	At Wharf.	ex Ship within one month.	At Wharf.
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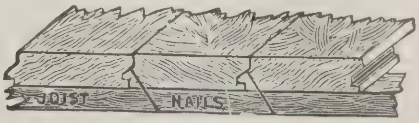
17¼ × 3 × 1½	6 10	6 3	10 1



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London.—For the erection of a new school at South Grove, for the London School Board. Mr. T. J. Bailey, Board's architect :—

			A
J. Longley & Co.	£25,610	0	£343
Killby & Gayford	25,270	0	390
W. Shurmur & Sons, Ltd. ..	25,155	c	370
J. Grover & Son	24,477	0	383
Holloway Brothers (London), Ltd.	23,936	0	475
F. & F. J. Wood	23,895	0	510
J. Chessum & Sons	23,864	15	308
W. M. Dabbs	23,844	0	470
W. Johnson & Co., Ltd.	23,842	0	390
Clarke & Bracey..	23,772	0	480
C. Cox	23,613	0	533
Perry & Co.	23,603	0	59ɹ
W. Gregar & Son	23,280	0	350
E. Lawrence & Sons	23,165	0	442
McCormick & Sons	22,987	0	363
J. & M. Patrick	22,838	0	324
J. Marsland & Sons	22,728	0	310
Stimpson & Co.	22,640	0	489
Treasure & Son	21,889	0	219
J. Greenwood, Ltd.*	21,519	0	342

A. If walls of classrooms and halls are plastered, add.

* Recommended for acceptance.

London, S.W.—For the erection of maternity wards, for the Bethnal Green Board of Guardians :—

F. & F. J. Wood, Mile End..	£13,773
Martin, Wells & Co., Vauxhall	12.900
Hayden & Sons, Hackney Road	12,000
C. Dearing & Sons	11,997
Holloway, Deptford	11,993
W. Sherman & Sons, Clapton	11,871
J. Shelbourne, Fenchurch Street	11,803
Foster Brothers	11,793
G. Parker, Peckham	11,740
J. Appleby & Sons, Lambeth	11,684
W. Lawrence, Waltham Cross	11,490
McCormick & Sons	11,478
W. King, Vauxhall Bridge Road ..	11,276
F. Thorne, Manchester Road, Isle of Dogs	11,200
Perry Brothers, Cambridge Heath	11,177
H. Wall & Co., Kentish Town	11,174
Richardson, Peckham	10,999
Shillitoe & Sons, Bury St. Edmunds ..	10,990
A. Symes, Stratford	10,850

[The tenders were referred to a committee for consideration and report.]

London, S.E.—For alterations and additions to the infirmary laundry, for the Lambeth Board of Guardians :—

J. F. Holliday, London, E.	£1,837	5
S. R. Moss, Southend-on-Sea..	1,398	0
J. T. Robey, London, E...	1,379	0
H. L. Holloway, Deptford, S.E.	1,354	0
Davis & Clayton, Walthamstow	1,350	0
B. E. Nightingale, London, S.E.	1,315	0
Balaam Brothers, London, S.E.	1,285	0
G. Parker, Peckham, S.E.	1,280	0
J. Shelbourne & Co., London, E.C. ..	1,270	0
A. E. Symes, Stratford E...	1,265	0
J. Parsons, London, S.E...	1,249	0
T. Pearce, Thornton Heath	1,227	0
J. O. Richardson, Peckham	1,198	0
W. Lawrence & Son, Waltham Cross, N.	1,198	0
H. Kent, Lewisham	£1,098	0
Foster Brothers, Norwood Junction, S.E.	1,196	0
T. Willis, Hammersmith, W.	1,187	0
Ll. Whitehead & Co., Ltd., London, S.W.	1,190	0
H. Bragg & Son,* 66 Robsart Street, Brixton, S.W.	1,027	0

* Accepted, and to be completed by June 30th.

London, N.E.—For the erection of a new police station at Hackney. Mr. J. Dixon Butler, architect, surveyor to the Metropolitan Police. Quantities by Messrs. Thurgood, Son & Chidgey, Charing Cross Chambers, Adelphi, W.C. :—

Clarke & Bracey	£14,986
Mowlem & Co...	14,972
A. Hood	14,724
Killby & Gayford	14,677
Grover & Sons	14,629
Higgs & Hill	14,628
Allen & Son	14,598
Shurmur & Son	14,490
F. & H. F. Higgs	14,401
Lawrance & Sons	14,206
Holloway Brothers..	14,190
Lathey Brothers	14,059
Willmott & Sons	13,998
Parker..	13,770
Lovatt..	13,650

Morpeth.—For the work in connection with the new cattle market, comprising the erection of offices, iron bar division fences, cement concreting, forming entrance to market, gates and fencing, &c., also for the formation and paving of roads from Oldgate Street to the market. Mr. J. Davision, borough surveyor :—

F. Hepple, Newcastle-on-Tyne ..	£2,324	16	5
T. W. Weir, Howdon-on-Tyne ..	2,300	0	0
R. C. Hall, Morpeth	2,227	18	0
R. Carse & Son, Amble, Acklington	2,193	9	6
G. Dixon, Morpeth	2,145	6	6
Maclaren & Co., Embleton, Chathill	2,142	13	5
G. Waterston & Son, Morpeth.. ..	2,127	10	11
J. Hadfield & Co., Sunderland.. ..	2,111	0	0
M. Young,* Elm Grove, Hexham ..	1,742	5	0

* Accepted.

Rumney (near Cardiff).—For rebuilding the Cross Inn, Rumney, near Cardiff. Mr. Edward H. Bruton, F.R.I.B.A., architect, 119, Queen Street, Cardiff :—

Lattey & Co.	£1,658	4	8
Fursey & Harris, Castleton	1,619	0	0
Goagh Brothers	1,520	0	0
J. Allan & Son	1,400	0	0
S. Shepton & Son	1,390	0	0
Miles Brothers	1,354	3	5
Williams & Hoare	1,340	0	0
G. Mallett	1,300	0	0
G. Couzens & Co., Riverside Works	1,264	17	6
W. Thomas & Co...	1,249	0	0
A. W. Cadwallader,* Roath	1,190	0	0

* Accepted. [Rest of Cardiff.]

Stonehaven (Scotland).—For the supplying and laying of about 3,400 yds. of 8in and 6in. cast-iron water-pipes, for the Town Council. Mr. George Murdoch, burgh surveyor :—

J. Walker, Leith	£1,948	10	3
W. Mitchell & Sons, Dundee	1,710	17	6
J. Murray, Stonehaven	1,544	15	3
A. McKay, Aberdeen	1,491	7	0
T. S. Dick, Broughty Ferry	1,477	15	6
W. Smith, jun., Stonehaven	1,465	9	9
J. Blaikie & Sons, Aberdeen	1,457	0	0
J. Laing & Sons, Inverarie	1,447	0	0
J. Ross,* 61 Barclay Street, Stonehaven	1,387	15	0

* Accepted.

Swanley (Kent).—For the erection of a police station at Swanley, for the Standing Joint Committee. Mr. F. W. Ruck, county surveyor, Maidstone :—

J. F. Varrell, Belvedere	£4,950	0
T. Knight, Sidcup	4,089	0
Goddard & Sons, Dorking	4,050	0
W. H. Archer, Gravesend	3,797	0
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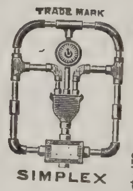

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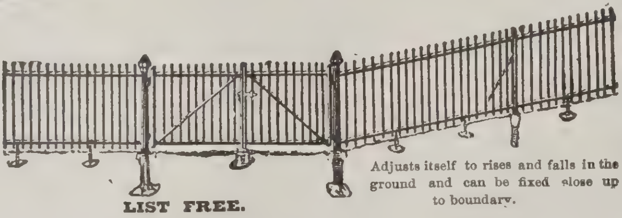

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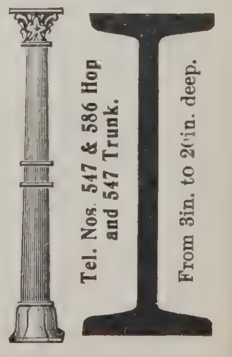
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THE

BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

March 11, 1903. Vol. 17, No. 422.

9, East Harding Street, E.C.

The Entasis. FROM an optical refinement in the days of Pericles the entasis has degenerated into a ludicrous feature on many modern buildings. When we look at a Greek column with its almost imperceptibly curved outline and compare it with that swollen column of which some architects seem so fond, we can hardly credit the sense that has turned a beautiful subtlety into a caricature. *Tenio*, "I stretch," with a vengeance; so that one may even see columns like rainwater butts and pilasters bulged out each side to distraction. Maybe those are the exceptions, but the scores of columns one sees with an entasis exaggerated to an absurd degree make it apparent that the architects who designed them have no proper sense of what they are doing.

Architectural Copyright. THE Society of French Architects is stated to have passed resolutions to the effect that the architect is to have the right of objecting to the reproduction by photography of any building designed by him, and that if the reproduction is put on sale he is to have the right of claiming a royalty on the sale; and, finally, that every copy of the print must bear the architect's name and qualifications. This seems to us to be an unreasonable and impossible proposal. We are quite willing to admit that the architect has an equal right to copyright protection as the artist—as recognized by the French law passed just a year ago—but the drawings of a building and the building itself are two very different things. When the building is erected it is no longer the architect's special property; it becomes public, for good or ill; and as such we fail to see why the architect should be given power to object to any photograph being taken of it, and to demand a royalty on the sale of prints, as suggested by the Society of French Architects; though we heartily agree that the architect's name should appear on every copy—poor man, he is sadly neglected. The proposal is of course one of copyright; and the law of copyright is probably the most involved of all. Here in England one has to copyright the plan of a building as a "book" and the elevation as a "picture." That is troublesome and unsatisfactory enough. What would happen if, before taking a photograph of a group of houses, one had to obtain the permission of all the architects who designed them, is direful to imagine. Yet this presumably would be necessary if the proposal of the French architects became law.

British Standard Sections. THE standardization of British iron and steel sections is one of the most notable trade reforms of recent times. The Engineering Standards Committee has practically finished its labours, and it only remains for the results to be published. The first of these is a pamphlet now before us (issued at one shilling) giving nine lists of different sections. The scope of this seemingly straightforward compilation is enormous. It is the work of two dozen committees and sub-committees composed of the most eminent men in the iron and steel industries of this country, including fourteen representatives from Government Departments. And the result is that within a twelvemonth it is believed British standard sections will be in general use throughout the country, effecting a yearly saving of several millions of pounds—in structural steel alone these sections are calculated to effect a saving of £750,000 a year. The pamphlet already referred to includes equal, unequal and bulb angles, bulb tees and plates, **Z** and **T** bars, channels and beams. The need for standardizing the **H**-beam has long been felt, and it is this section which mostly concerns builders and architects. Thirty sections of it are given—an ample range—varying from 3in. by 1½in. to 24in. by 7½in., and weighing respectively from 4lbs. to 100lbs. per ft. The Committee says that beams ordered to the standard thickness shall be practically accurate in profile; but if the thickness of the web is less or greater than these standards, the width of the section will be decreased or increased by the same amount; and it is suggested that beams be ordered by depth of section, width of flanges, and weight per ft. A table giving the areas of sections in square inches, moments of inertia, &c., is to be issued in due course. As the sale of these lists is intended to supply the much-needed funds for carrying out the work of the Committee, the technical press has been requested not to publish them; and we must therefore recommend our readers to purchase copies either from the publishers (Messrs. William Clowes & Sons, Ltd., 23, Cockspur Street, S.W.) or direct from the offices of the Committee, 28, Victoria Street, London, S.W.

The Tonnere Hospital. IN our issue for January 28th last we gave a description of this remarkable building which the municipality of Tonnere proposed to convert into a covered market, together with a plan of the hospital and a perspective sketch of a portion of the interior as it existed in mediæval times, taken from Viollet-le-Duc's Dictionary of Architecture in France. It is gratifying to learn that a movement has been set on foot for the preservation of this almost unique relic of the Middle Ages, mainly through the exertions of Dr. Chaput, an enlightened medical practitioner of Tonnere, and a subscription list has been opened for the purpose of raising the necessary funds for the repair of the roof, for which a sum of from £800 to £1,200 will be required. The hospital is classed as an historical building and is under the control of the Commission for Historical Monuments, who in view of the protests of the inhabitants of Tonnere have refused their consent to the proposed conversion of the hospital. The Commission have not sufficient funds to defray the entire cost of the necessary repairs to the roof-timbers, but will contribute to the cost provided a substantial sum is subscribed by the public. The subscription list is under the patronage of M. Amayat and M. Léger of the Institute, and other distinguished names, and M. Ch. Normand, the president of the Society of Parisian Monuments, has given valuable assistance. The hall of the hospital is almost entirely paved with flat grave-stones, interments having taken place up to the sixteenth century notwithstanding the presence of the patients, and in the seventeenth and eighteenth centuries it is computed that at least a thousand persons were buried in the hall.

Royal Academy Exhibition. THE receiving day for architectural works at this year's Royal Academy Exhibition is Friday, March 27th. We shall be pleased, as in previous years, to receive drawings from intending exhibitors, and undertake to deliver them at Burlington House free of charge; but they must reach us at latest by noon on the day mentioned. It is very desirable that they should be sent as early as possible so that there may be ample time for photographic reproductions to be made of them. The name and address of the sender should of course be put on the back of every drawing and a label attached to the frame with a string.

BALZAC'S HOUSE.

WITH reference to the note on p. 17 of THE BUILDERS' JOURNAL for February 25th on Honoré de Balzac's house at Ville d'Avray, near Sèvres, a correspondent points out that the suggestion that the architect forgot the staircase, and that the latter had to be added after the house was finished, has no foundation in fact, but is a joke at the expense of architects which has been related of several other buildings in this country and abroad.

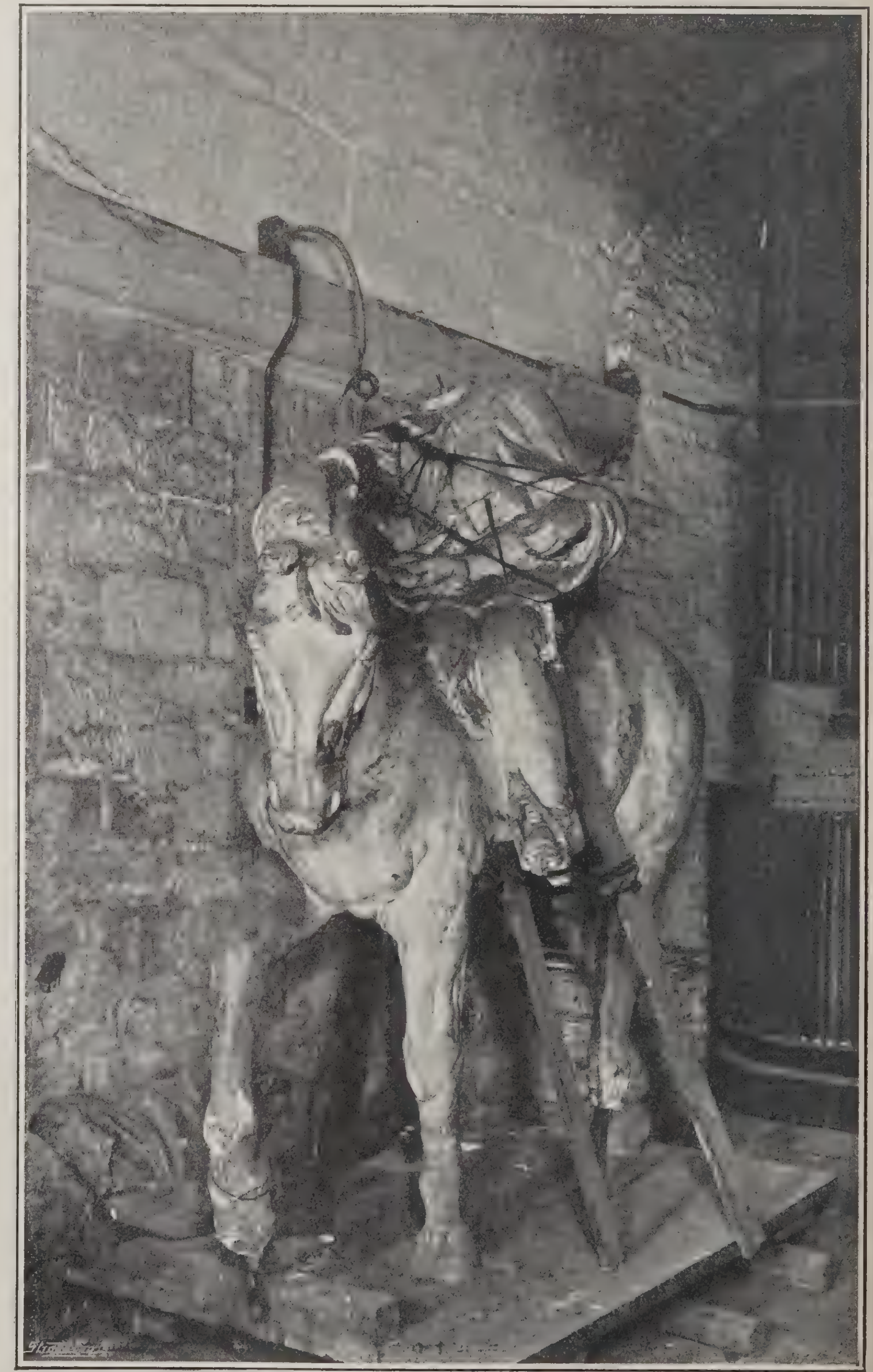
When the present Lyceum Theatre was built, in 1834, it was found necessary to construct a temporary staircase to the gallery, the requisite ground for the permanent staircase not having been obtained at the time fixed for opening the theatre, and this led to a report, which was repeated in several places, that the architect had forgotten the staircase. The architect, Mr. Samuel Beazley (1786-1851), a man of great experience in building theatres, contradicted this report in a letter to the "Times," in which he explained the circumstances which led to the construction of the temporary staircase to the gallery; but notwithstanding this contradiction, the silly tale is still repeated, and a few days ago "Public Opinion" in an article on the Lyceum Theatre revived this ancient canard. When it is stated that Beazley, in addition to the Lyceum Theatre, built the City of London Theatre, Norton Folgate, the St. James's Theatre (for Braham the singer), the Adelphi Theatre, and prepared drawings for two theatres in Dublin, two in Belgium and one in Brazil, it will be seen how impossible it was for such an oversight as the omission of a staircase to an important part of the auditorium to have occurred.

The facts with regard to the building of Balzac's house, Les Jardies, at Ville d'Avray, are related by Balzac's friend Léon Gozlan, in Balzac *en pantoufles*, and are to this effect: "It has been reported that while directing himself the building of the pavilion at Jardies, with a despotism that never relaxed, he forgot the staircase. That he would not permit any suggestion, observation or criticism from his architect or his builder's men is one fact to which we can bear witness; but that he should have neglected to provide a staircase in planning the house, and that one fine day builders and architects should have rushed up to him exclaiming, 'M. Balzac, the house is finished; when shall we build the staircase?' is a second fact which demands an explanation in proportion to its importance. Balzac contemplated for his Jardies spacious rectangular rooms, lighted from the four sides of the building. Now, in the architect's design the Minotaur-like staircase swallowed up here the third part of one room, there the half of another; it disfigured the design created by the author's poetic pencil. An attempt was made to reduce its size, to turn it round, to relegate it to the angles of the building, the building being unhappily too cramped to afford any spare room; the confounded staircase spoiled everything. The bricklayers threw their mortar into the air, the architect broke the legs of his dividers. It must have been during one of the struggles with the difficulties of this problem that Balzac said, 'Since the staircase means to master me, I will get rid of it.' This was done. The rooms then rose without obstacle, without any other limitation than the four external walls, and the enclosing walls of the staircase were built as an after-thought in front of the house as a punishment for its tiresome pretensions. Balzac might have excused himself, seeing that in Holland and in Belgium (and it might be added in England) whole cities are built on this simple plan, the houses carrying their staircases on their backs like a basket; he always declined to explain himself on this point."

In a letter to the Countess Hanska, the Russian lady he afterwards married, Balzac thus describes his house:—

"The house itself is like a parrot's cage, one room on each storey, of which there are three. On the ground floor there is a dining-room, on the first-floor a bedroom and dressing-room, and above that is my workroom, in which I am at this moment writing to you at midnight. The whole is flanked by a staircase which much resembles a ladder. All the way round on the first floor is a gallery, supported on brick piers, where one can walk and shelter. This little Italian pavilion is painted brick colour, with stone quoins at the angles. The addition containing the staircase is painted with red and white stripes like bed-ticking. There is only one room here for me About twenty yards from the house towards the park of St. Cloud are the offices, consisting of a kitchen, scullery and larder, with a stable and coach-house, bathroom and wood store. On the first floor is a large apartment, which I can let if I please; on the second floor are the servants' rooms and a room for a friend. I have a spring of water equal to the celebrated spring of Ville d'Avray; it comes from the same source, and a wall encloses the whole of my property."

Alfred Stevens's Plaster Model of the Duke of Wellington is shown below as it stood in the vaults of St. Paul's Cathedral. At the sale of the great sculptor's effects it became the possession of Mr. Hugh Stannus, F.R.I.B.A., who removed the head for safety's sake. This is the model which was purchased by the private committee who commissioned Mr. John Tweed to complete the work for the memorial in St. Paul's Cathedral: and it is now in Mr. Tweed's studio at Chelsea.



ALFRED STEVENS'S ORIGINAL PLASTER MODEL FOR THE WELLINGTON MEMORIAL, AS IT STOOD IN THE VAULTS OF ST. PAUL'S CATHEDRAL.

Views and Reviews.

A Fine Alphabet.

This alphabet of Roman capitals has been carefully enlarged from the inscription on the Trajan Column at Rome, of which the author observes in a note that it is, on the whole, "the finest in character and proportion of any Roman letters available." We do not much care, however, for the "M," "N," "R" and "S." The letters not appearing on the inscription, H, J, K, U, W, Y, Z, have been drawn from the best existing material; the character of the Trajan letters being kept as near as possible. Perhaps the "J" is the least satisfactory of the new letters. Squaring is given, together with diagonal lines showing the thickest and thinnest parts of the round letters. The first set of lower-case letters is made of the semi-uncial forms of the seventh, eighth and ninth centuries, preserving uniformity as far as possible, while avoiding too great a similarity to the other sets. The second lower-case set is Roman, carefully enlarged from photographs made for William Morris from the Italian type of Nicolas Jensen, fifteenth century. The third is Italian round-hand black letter, enlarged from choir books of the sixteenth century in the National Art Library, Victoria and Albert Museum.

The alphabet is admirably printed on strong drawing-paper, each capital being 7in. square, with the lower-case letters below, and the whole enclosed in a wrapper-envelope. We must compliment the artist and the publisher on their production, which should be in the hands of every architectural student.

"An Alphabet of Roman Capitals, together with three sets of lower-case letters," by G. Woolliscroft Rhead, R.E., Hon. A.R.C.A. Lond. London; B. T. Batsford, 94 High Holborn, W.C., price 2s. 6d. nett.

Shakespeare's Town.

Mr. Baker in opening his volume does well to point out that Stratford itself is full of charm and beauty, and though inseparably connected with the great English poet and dramatist, is by no means dependent on this fact for its interest. Our recollections of the place are very pleasant ones, and the excellent illustrations bring back to mind many exquisite bits we remember to have seen in this gem of the Midlands. The view from the top of the Memorial Tower, if one takes the trouble to climb the stairs, gives a magnificent panorama of inviting and restful scenery. The town, too, gives one a curious sense of completeness. It has its aim and object—its industry, one might say—the exploitation of its greatest son. To that end everything is subordinated. You proceed from point to point of interest, always meeting custodians with books of sixpenny tickets which admit you to the objects of their charge. Everywhere volumes of capacious gape are placed to secure the signatures of the friends who might otherwise write on sacred walls. There is no hurry and no importunity, except from cabmen; only Americans could charter char-a-bancs in such a place. The real charm of the town comes only to the wanderer, who, having exhausted the established formularies of the place, saunters into New Place Garden under the shady trees, or down to the Memorial Garden to watch the rippled river and the Yankee steam launch carrying its human freight beyond the bridges.

The purpose of this excellent guide is, however, to show the points of interest, and this it does "excellent well." Short notes on Charlecote House, the home of the Lucys, and Clopton House, with illustrations, are included at the end of the book.

"The Collegiate Church of Stratford-on-Avon, and other Buildings of Interest in the Town and Neighbourhood." By Harold Baker. Cathedral Series. London: George Bell & Sons, Tavistock Street, Covent Garden, price 1s. 6d. nett.

Mont St. Michel.

There is nothing in this book about the collection of old watch-cocks, the guns and swords, or the wonderful wax figures in their cells at Mont St. Michel, nor a word about the prisoner-sculptor Gaultier or Bertrand du Guesclin and his wife Tiphaine de Raguenel. The author knows well that information about these matters can be had in any of the guide-books. Instead, he has devoted himself entirely to the architectural history of the Mount, and his handbook is an admirable one for all students. Mr. Massé has avoided the catalogue of the dull archæologist, and gives only so much of the dry bones of the Mount's history as is essential to a proper understanding of the many changes through which it has passed: changes monastic and national, and, alas, the irrevocable destruction of the restorer. Indeed the story of the buildings is largely one of fire, wreck and restoration. On such an exposed and isolated site, and with an inflammable town at the base of the rock, the damage caused by wind, weather and fire is not surprising, but the havoc of the restorationist might well have been spared us. The nave of the abbey-church, Mr. Massé observes, has been so mutilated by man, and so defaced and scarred by accidental fires, that a total reconstruction has been recommended and will shortly be taken in hand. "The word 'restoration' is dear to the French architect to-day, and on the whole, when he restores, he does it thoroughly, and, from his point of view, thoroughly well." Viollet-le-Duc and M. Corroyer have been responsible for much of the new work, and latterly M. Petitgrand has had charge of the "restorations." Exterior repair is absolutely necessary, but the architects go beyond that and sweep away the irreplacable work of past ages.

Students will find this book an excellent one, dealing first with the general history of the Mount and then with the individual buildings—the abbey and its precincts, the Merveille (the new glazed tiles on the cloister of which we quite agree with the author are very discordant), the substructures—the Crypte de l'Aquilon, Crypte des Gros Piliers, Promenoir, &c.—the ramparts and the town. The book is well illustrated from photographs, and includes three plans showing the relative positions of the buildings on the three levels of the Mount.

"The Abbey and Town of Mont S. Michel," by H. J. L. J. Massé, M.A. London: G. Bell & Sons, Covent Garden, price 2s. 6d. nett.

SANITARY INSTITUTE.

Health Exhibition at Bradford.

FROM Tuesday, July 7th, to Saturday, July 25th next a health exhibition will be held at the Bellevue Volunteer Barracks, Manningham Lane, Bradford, in connection with the twenty-first autumn congress of the Sanitary Institute. The exhibits will be classified under four divisions, A, B, C and D, subdivided into classes and sections. A will deal with science in relation to hygiene; B with hygiene of special classes, trades and professions (schools, hospitals, &c.); C with construction and sanitary apparatus (class I. relating to building materials, construction and machinery, class II. dealing with water-supply and sewerage, and class III. with heating, lighting and ventilating); and the last division, D, with personal and domestic hygiene.

The principal boroughs throughout the kingdom have been invited to send delegates to the meeting, in addition to the members and ordinary visitors, so that the exhibits will be brought under the notice of members of corporations and officials from all parts of the country. (The number of delegates and members attending the Congress is usually about 2,000.)

Applications for space must be made on the official form and under the proper class, and sent to the offices of the Institute, Margaret Street, London, W., not later than Tuesday, June 9th, but it is advisable that much earlier application should be made. The scale of charge for floor-space will be 15s. per ft. frontage, with a depth of 6ft. Corners and special spaces will be charged at higher rates: wall-space, 1s. per sq. ft. No floor-space will be allotted for less than 3ft. frontage, or wall-space for less than 5 sq. ft. All charges must be paid at the time of allotment. Silver and bronze medals will be awarded at the discretion of the judges, and their decisions will in all cases be final. A complete classified and illustrated list of exhibits, to which awards have been given by the Institute, is published by the Institute. A special medal will be awarded for household sanitary appliances in case of pre-eminent merit, which will be called the "Rogers Field Medal." Protection in accordance with the Patents, Designs and Trade Marks Act, 1883, will be obtained from the Board of Trade for persons desirous of exhibiting new inventions.

Former congresses of the Institute have been held at the following towns:—

Leamington, 1877.
Stafford, 1878.
Croydon, 1879.
Exeter, 1880.
Newcastle-upon-Tyne, 1882 and 1896.
Glasgow, 1883.
Dublin, 1884.
Leicester, 1885.
York, 1886.
Bolton, 1887.
Worcester, 1889.
Brighton, 1890.
Portsmouth, 1892.
Liverpool, 1894.
Leeds, 1897.
Birmingham, 1898.
Southampton, 1899.
Paris, 1900.
Manchester, 1902.

THE FIRE EXHIBITION.

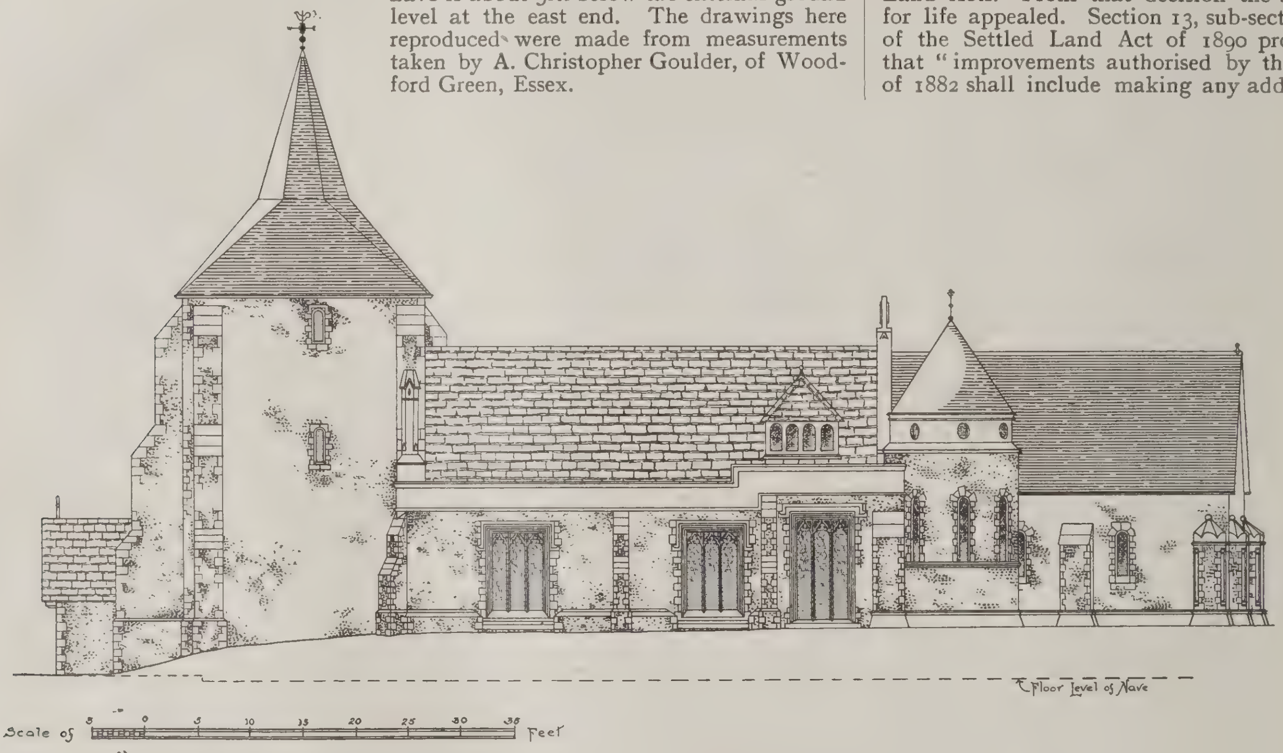
RAPID progress is now being made with the arrangements for the International Fire Exhibition at Earl's Court, and a series of meetings are being held by the various committees in charge of different sections. Among the numerous British exhibitors, apart from the fire-appliance trade, which will be strongly represented by firms like Messrs. Shand Mason and Messrs. Merryweather, the firms interested in the constructional and electrical side of fire-prevention will play an important part. Thus, arrangements have been made for large floor-exhibits by Stuart's Granolithic Stone Co., the New Expanded Metal Co., the Columbian Fireproofing Co., and other firms of that character. Partitions will be shown by Messrs. King & Co. and similar makers. The constructional firms are represented by Messrs. Drew-Bear Perks & Co., the St. Pancras Iron Works, &c., whilst the electrical side has among its representatives the General Electric Co., the Siemens Electrical Appliances Co., Messrs. Pearsons' Fire-Alarm System and Messrs. Oatway's Alarm System. Side-issues are represented among others by Messrs. Millars' Karri and Jarrah Forests for timber constructional work, and the Ratner Safe Co. for fire-resisting doors, safes, &c. As is the case with British firms, so with Continental firms. It is anticipated that there will be a very considerable representation from Germany, France and America. Germany, in particular, is arranging a series of important exhibits in the Ducal Hall. The awarding of prizes in connection with the exhibition will be arranged with greater care than is usually the case with exhibitions. It has been recently announced by the Society of Arts that they have decided to offer Society of Arts gold medals, and other medals, for certain classes of modern fire-extinguishing and life-saving appliances shown at the exhibition. The actual prizes offered are one gold, two silver and two bronze medals for the best chemical fire-engine, and similar medals for the most easily worked long ladder of 80ft.

MICKLEHAM CHURCH.

THIS interesting little church is situated on the main Worthing road in the vicinity of Box Hill. It has undergone considerable alterations at various times, but the remains of the Norman church are still worth attention. The entrance doorway below the west tower and the chancel arch are the most interesting portions of the building, the latter being ornamented with the "zig-zag" side by side with the "dog-tooth" ornament. In 1823 galleries had to be erected on either side of the nave, and as the height of the arcade was insufficient to permit this to be done the Norman columns and arches were removed. In their place square piers of brick and stucco were erected having plaster enrichment similar to that on the existing chancel arch. In 1891 the church was restored to the original design, the galleries were removed, and the round tower on the south side erected for the reception of a new organ. On the north side of the church is the family pew or chapel of the owners of Norbury Park, which contains a fine fifteenth-century tomb to the Wyddolkson family, as well as a window of the same period. The west tower dates from the eleventh century, and is built of rubble work with freestone quoins, the heavy buttresses of which are a later addition and have been recently restored. It contains three bells bearing the respective dates 1610, 1624 and 1850, the last having been re-cast at that date from the old bell. It will be noted from the plan that the chancel and nave are not in the same straight line, the angle of inclination being about 5 degs., and owing to the slope of the site the floor-level of the nave is about 5ft. below the external ground level at the east end. The drawings here reproduced were made from measurements taken by A. Christopher Goulder, of Woodford Green, Essex.

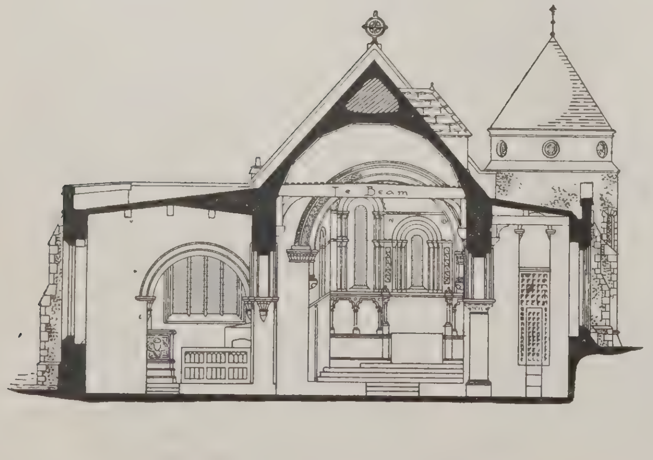
Law Cases.

What Constitutes an "Addition" to a House.—*In re Blagrave's Settled Estates* recently came before the Court of Appeal. This was a case of considerable importance to owners of landed estates. Mr. H. B. Blagrave, tenant for life of the Calcot Park and other estates in the county of Berks, took out a summons asking that £1,307 10s. 2d. might be allowed to him for expenses incurred in providing an electric-light installation, including an engine or dynamo house, for the mansion house of Calcot Park. Mr. Justice Joyce allowed the cost of the engine or dynamo house, which stood at some distance from the mansion house, but held that electric-lighting plant was not an "improvement" for which expenditure out of capital moneys could be allowed under the Settled Land Acts. From that decision the tenant for life appealed. Section 13, sub-section 2, of the Settled Land Act of 1890 provides that "improvements authorised by the Act of 1882 shall include making any additions

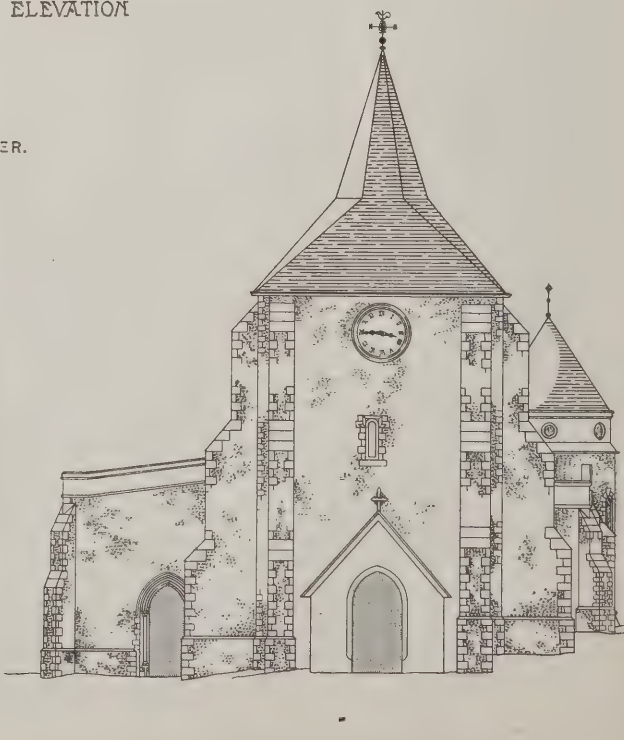


SOUTH ELEVATION

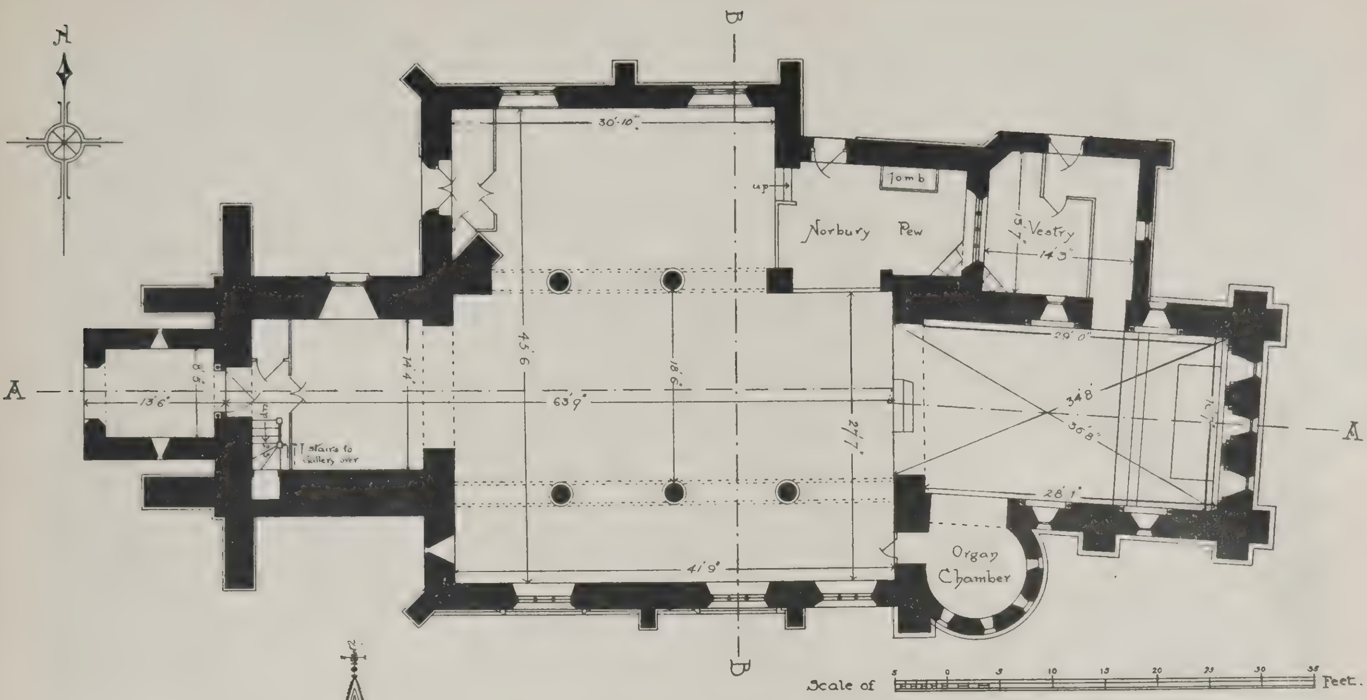
MICKLEHAM CHURCH, SURREY.
MEASURED AND DRAWN BY A. CHRISTOPHER GOULDER.



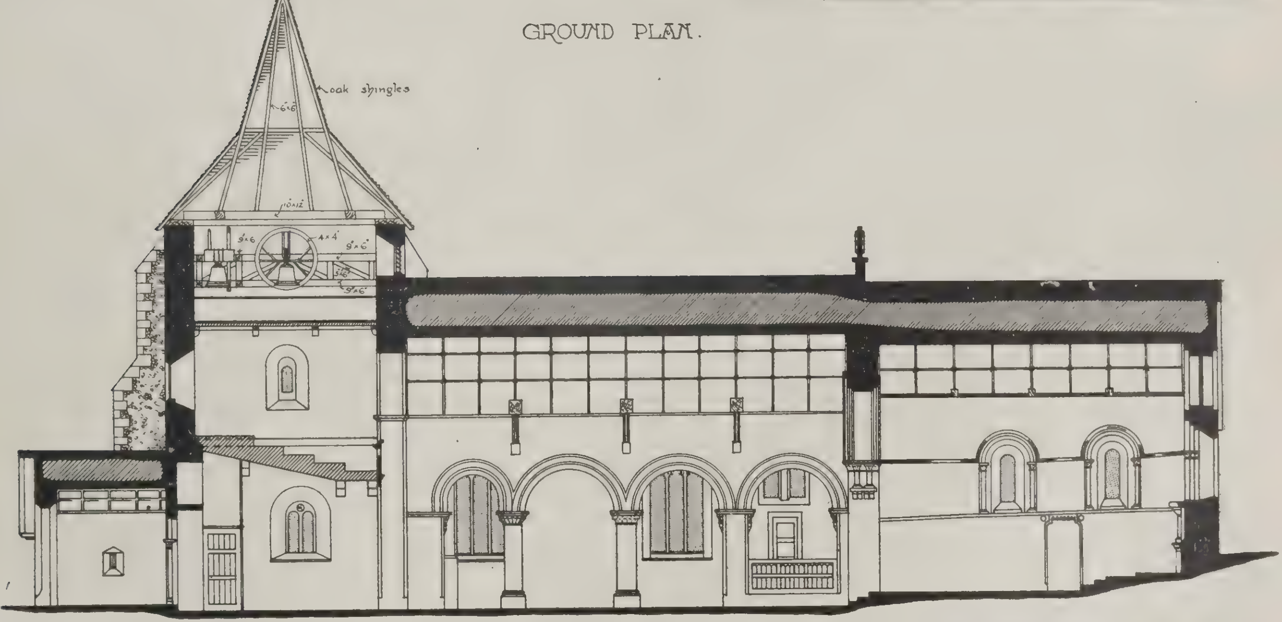
CROSS SECTION, B.B.



WEST ELEVATION.



GROUND PLAN.



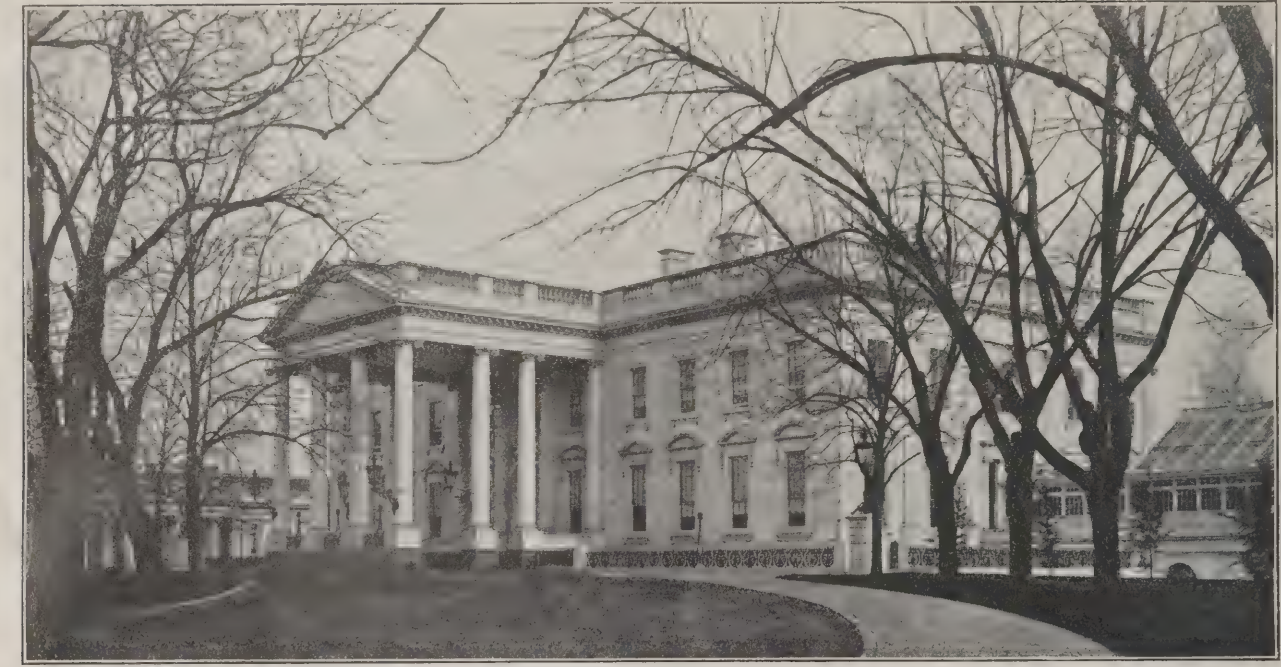
LONGITUDINAL SECTION .A.A.

MICKLEHAM CHURCH, SURREY. MEASURED AND DRAWN BY A. CHRISTOPHER GOULDER.

to or alterations in buildings reasonably necessary or proper to enable the same to be let."—The Court of Appeal dismissed the case.—The Master of the Rolls said it was difficult to see how an "addition" could be said to be within the Act which was not structural. Putting down wires in a house or putting an engine in an engine-house his Lordship could not think was an "addition."—Lord Justice Romer thought that when the Legislature spoke of "additions to or alterations in buildings" it referred to something in the nature of a building. That being so, his Lordship thought that even if a dynamo-house came within the sub-section, it could not be said that the installation of electric lighting also came within it.—Lord Justice Cozens-Hardy agreed. He also doubted whether the expenditure on a dynamo-house could be a building within section 13, sub-section 2, of the Act of 1890.

Underground Kitchens: Case under the L.B.A.—At the Marylebone Police Court recently the secretary of the Express Dairy Co., Ltd., was summoned by Frederick Hammond, district surveyor for Hampstead, for failing to comply with a notice of irregularity in respect to the company's new premises at No. 1, Central Parade, West End Lane. The notice of the surveyor had reference to a cellar or store-room on the ground floor of the premises, which, it was said, had been converted by the company into a kitchen or servery, contrary to the London Building Act, which required that every "habitable room" should be 8ft. 6in. in height and have one or more windows opening directly to the external air. This room, which was used for preparing and cooking food, &c., was only 6ft. 3in. high, and, according to the surveyor, when he first visited it had little or no ventilation and was a disgrace to the company. A window was afterwards put in, but still the room was not fit for the purpose for which it was used.—In defence it was urged that the apartment was not a "living-room" but a scullery.—Mr. Plowden, the magistrate, held that the room was a habitable or living-room and made an order for the company to comply with the notice, granting the surveyor £5 5s. costs.

Pulling up the Roads.—On Thursday last the Charing Cross and Strand Electricity Supply Corporation was summoned to Bow Street Police Court by the Westminster City Council for making an excavation at the corner of Garrick Street and St. Martin's Lane, for the purpose of putting down a distributing-box 25ft. square in place of one measuring only 10½ft., without first giving notice to the Council. An emergency notice was sent after the work had been commenced. The work was in progress about a fortnight, and during that time there could, in consequence of the obstruction, be only one line of traffic. The Council wanted to show that the defendant corporation could not disregard the legal restrictions.—For the defence it was submitted that no offence had been committed, as the work done was a work of emergency. It was not a new work, but a renewal or amendment of an old one, and twenty-eight days' notice was not necessary.—The magistrate said he did not agree with that, and fined the defendant corporation 20s. and £2 2s. costs. He expressed his willingness to state a case.



THE WHITE HOUSE WASHINGTON.

THE REMODELLED WHITE HOUSE.

THERE has lately been completed a reconstruction of the Presidential mansion at Washington which ranks as the most important and most extensive project of the kind undertaken since the erection of the historic structure. But the present remodelling, although the most extensive, is by no means the first reconstruction which the famous building has undergone. Following the attempted destruction of the White House by the British troops in 1814, the mansion was restored under the direction of Hoban, the architect of the original structure, which work was completed in 1817. In 1823 the south portico, as at present constituted, was added, and in 1829 was constructed the grand portico and *porte cochère* of Ionic columns which has since constituted the most distinctive feature of the north front of the building.

On the exterior the chief portion of the alterations just completed is the restoration of the long colonnaded wing on the east side of the building, which was removed during the administration of President Johnson or earlier. The entire present project has had as its aim a return to the original plans of the Presidential mansion. The generic scheme of the White House was selected by George Washington in conference with James Hoban, the architect, and they were frequently in consultation with Jefferson. The declaration has frequently been made that the original structure was modelled after Leinster Castle in Dublin, but the architects who went to Dublin to inspect the structure in question before undertaking the present restoration of the Executive Mansion assert that there is no foundation whatever for the claim. Both buildings are in Italian Renaissance, but the White House is far the finer example of the two; indeed, it may be noted in passing that the best American architectural critics are almost unanimous in the opinion that the White House remains to-day the best residence house in its exterior lines to be found in the United States. Others more recently erected represent far greater expenditure, but none compare with the Presidential home in beauty and refinement.

The White House is peculiarly Virginian in its genesis; not only does the design in its relation to the Potomac water front conform to the Virginia customs prevailing at the time of its erection, but the impress of the ideas of Thomas Jefferson upon the structure is rendered readily apparent by the similarity of the design to that of Monticello—the Jefferson homestead—where basement wings, or terraces, extend from the main portion of the mansion house. The White House originally had projections of the same type, and while the wing on the west side in the course of time became concealed by a conservatory on top and was so cloaked on the south front by propagating gardens as to lose its distinctive character, the terrace on the east side was removed altogether, as already mentioned, during the administration of Buchanan or Johnson. To restore these terrace wings has been one of the principal objects of the present reconstruction.

The new terraces are one-storey brick structures which extend out on the ground level, both east and west, and form a part of the basement. The top of the terraces is absolutely flat, and on substantially the same level as the first floor of the White House. They have on each side a parapet wall, about 2ft. 6in., and are adorned with potted trees and box shrubbery, thus affording a beautiful vista of green extending 250ft. in each direction from the centre of the White House. The treatment of these esplanades was suggested by similar work at Versailles, which in turn is possibly a partial copy of the colonnaded walks common in the architecture of Rome.

With the restoration of the terraces, or wings, the south side of the White House, facing the Potomac, becomes, as was originally intended, the front of the building, and what has hitherto been termed the basement is transformed into the first floor. The utilization of this former basement constitutes one of the most notable achievements of the present project.

The main floor of the mansion is approached from below by a beautiful stone stairway 12ft. wide. Niches in the side walls hold electric-light standards. A similar stairway directly over this one, with equally gentle lifts and broad treads, connects the main and upper floors of the house. A commodious elevator has also been installed.

The keynote to the interior architecture of the remodelled building is found in the restoration of the great Colonial hall, opening from the north entrance, which in the past constituted the only means of access to the building, but which will in the future be reserved for the use of the Presidential household and personal friends. The stained-glass screen, which was erected by President Arthur in order to separate the entrance-hall from the main corridor, has been removed and a Pompeian effect imparted by the substitution of six white pillars. The floor is of marble and the walls and ceiling in white in simple, yet classical, treatment. The judicious arrangement of mirrors reaching from floor to ceiling tends to accentuate the evident spaciousness of the apartment.

The main floor of the White House has not been changed as much as might appear from a casual inspection, and, with the exception of the removal of the glass screen, the only essential partition change is that by which the State dining-room is enlarged by the absorption of the space which formerly constituted the westerly end of the main corridor and that occupied by a stairway leading to the floor above.

On the upper floor of the mansion the space formerly occupied by the executive offices has been utilized for sleeping-rooms, and six tiled-baths have been provided. The attic, which was formerly used only for storage purposes, now contains several bedrooms for servants, a bathroom, storerooms and a linen-room. Much work has also been performed which is not apparent to the casual observer, as for instance a great amount of labour has been expended in rendering absolutely secure the foundations and underpinnings of the White House, which are frequently subjected to excessive strain, and 175,000 new bricks have been placed in position under the reception-rooms, in addition to the steel joists and girders. The handling of the immense crowds which frequently assemble at the White House will be greatly facilitated by the new arrangement of the mansion, and particularly by the provision of four separate entrances instead of the single doorway, which was formerly obliged to answer all purposes.—(Extracts from an article in the "Scientific American: Building Edition.")

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Chemical Terms.

St. Leonards-on-Sea.—Studious writes: "Is there a book published dealing with correct definitions of chemical terms, &c.?"

See the article on "The Chemistry and Physics of Building Materials" in "Specification, No. 6." Almost every chemical term is defined in Watts's "Dictionary of Chemistry" (Macmillan & Co., Ltd., 4 vols.). A good elementary book on chemistry is Reynolds's "Experimental Chemistry for Junior Students," 4 vols. (Longmans, Green & Co.). To read Watts's "Dictionary of Chemistry" you need an expert knowledge of chemistry, and if you require to study the subject fully from the beginning, and at the same time have a very complete book, then Roscoe & Schorlemmer's great treatise is the best. It is published by Macmillan & Co., Ltd., in 3 volumes, consisting of 8 parts.

Claim by Executors for Interference with Light.

Enquirer writes: "A few years ago my client built a cottage, using the pine-end of an adjoining one, at the same time extending the backyard of the building beyond the building line of the adjoining property. The sum of £10 has been paid for the use of the pine-end, and the plans, &c., were approved (before building operations were commenced) by the adjoining owner, who died a few months ago. The executors of his will, through their solicitor, now claim damages for interfering with their light, in consequence of our building line having been extended beyond theirs. My client sold the property about twelve months ago, but their solicitor says that they can claim under some new Act. Shall I be right in advising my client to resist the claim?"

If the adjoining owner approved the plans which are now being carried out, his representatives cannot repudiate his agreement. If, however, the extension which causes the alleged interference with light, &c., was an addition to the plans as approved by the adjoining owner, then it stands on a different basis, and must be considered in connection with the Statute of Limitations and the Common Law. No data are given which enable me to pass an opinion on your rights under the Statute and Common Law. But, generally speaking, in the absence of prescriptive rights or statutable prohibitions, you can do as you please with your own land. W. JOHNSON-ROBERTS.

Measured Drawings of Eton College.

London, N.W.—F. C. writes: "Are there any measured drawings published of Eton College—more especially the chapel and the great gateway on the east of the quadrangle?"

Exhaustive enquiries have failed to discover any such measured drawings.

G. A. T. M.

Stephenson's "Estimating."

Stourbridge.—O. S. writes: "A customer of mine asked me to order Stephenson's book on 'Measurement of Dilapidations.' I am informed that no such book is known. Is this so?"

There is no such book by Stephenson on the measurement of dilapidations. Your customer evidently meant Stephenson's "Estimating" published at 6s. 6d. Apply to Mr. B. T. Batsford, 94, High Holborn, W.C.

Right to Remove Doors and Windows.

Netherfield.—J. C. writes: "I have given notice to a weekly tenant, but cannot get him to quit. Is it legal for me to send a man to remove the doors or windows or otherwise render the house inhabitable? The house is in a filthy condition and badly in need of repair?"

Certainly not without an order from a magistrate. It would be best to consult a solicitor—and it would have been better still to have done so without incurring the delay necessarily attaching to an appeal to a weekly paper, which after all is not a legal paper either. G. A. T. M.

Size of Flue and Boiler Setting.

Ramsbottom.—A. C. writes: "What should be the size of a flue from the furnaces of a single plate? Two furnaces would enter the same flue. Also, to what height should it be carried? The surrounding buildings are only about 16ft. to 20ft. to the eaves, and the country around is flat. How are 'kiers' or bleaching boilers set? Is there any technical book dealing with the subject?"

The flue from the furnaces of single plate should be ⅕ area of furnace grates, the chimney ½ area of main flue. The height may be about 30ft. unless there is any local by-law to the contrary. Kiers are sometimes hung from the sides and set with what is called a flash flue, *i.e.*, straight from furnace to chimney. Information on setting boilers may be obtained from Wilson's "Steam Boilers" (Crosby, Lockwood & Co., 7, Stationers' Hall Court, London. E.C., 6s.).

HENRY ADAMS.

Overhanging Walls.

Netherfield.—J. C. writes: "The roof over a hay loft (13ft. span and 30ft. long, collar-braced—the ceiling joists acting as collars, but no plaster ceiling) has thrust the front 9in. brick wall out 3in. to 4in. from floor to wall-plate (above 6ft. 6in.). What is the simplest plan to get the wall back into position and also to strengthen the roof?"

If the roof is arranged with ceiling joists holding the feet of the rafters it can exert no thrust, and there must be some other cause for the wall overhanging as described. The cause may be poor mortar which has perished on the face of the wall. Probably four ½in. tie-bolts, with ⅝in. ends and nuts, would be the cheapest way of preventing the wall from going further and might bring it back a little if screwed up alternately.

HENRY ADAMS.

Preserving Woodwork of Dye-House Roofs.

Ramsbottom.—A. C. writes: "What are the best preventatives of decay in woodwork for dye-house and bleach-house roofs, colour-shop roof, and for woodwork in rooms where acid fumes are given off?"

Creosoting is the best preventative of decay in timber, but the smell is objectionable in buildings. A more recent and probably suitable process for interior timbering is Haskinizing. It consists in placing raw wood in a cylindrical treating chamber, made of boiler plate, of any size, or numbers of them placed together, according to the output required, and submitting the same for a few hours to a medium of superheated, circulating, compressed air, which effects a chemical change. The air-pressure employed (200 lbs. per sq. in.) prevents evaporation while the intense heat (300 degs. to 400 degs. Fahr.) passes through to the centre of the timber, causing the constituents to organize into an oleaginous compound, saturating the fibre and filling the pores. In cooling down, under the same pressure, the new compound becomes consolidated with the fibre, thus indurating, strengthening, perfecting, beautifying, and preserving the wood from decay. The germinative principle inherent in the sap is destroyed, all fungi, germs or insect life are killed, and no offensive odour is emitted from the wood after treatment. Briefly, it may be termed an internal autogenic dry creosoting.

HENRY ADAMS.

Overlooked Premises.

Leeds.—Subscriber writes: "My client owns a plot of ground originally bought as building land, but at present used as garden. The owner of the adjoining plot is now building a house within a few feet of his boundary and *set back* about 15ft. behind the proper building line, having all its main windows (evidently purposely) overlooking my client's garden. My client proposes to build about 10ft. from his boundary, but owing to the size of his land he is obliged to adhere to the original building line, 15ft. in front of the overlooking house. The local authority approve the plans I have drawn and also his block plan; he does not, however, wish to commence building until the autumn. By waiting till then will he have given 'tacit consent' to his neighbour?"

Your client has the whip hand of his neighbour entirely, as "tacit consent" cannot be construed until the windows have been left in enjoyment of their light for nineteen years and a day—until, that is, they become ancient lights. In a well-known similar instance in the south of London, the person in the position which your client now occupies erected a buttressed boundary wall, entirely on his own property, and to the height of his neighbour's eaves, of rough brick burrs. It is now covered with creepers and a decidedly pretty feature at the end of the garden. Possibly your client might like to do the same, or might waive his right to go to an unlimited height for an annual payment on a proper agreement which would retain his right to build up to his boundary at any future time. G. A. T. M.

Buildings Around Nottingham.

Nottingham.—C. B. T. writes: "Being new to this district, I should be glad to know of any buildings in the vicinity worth sketching or measuring."

Nottingham County is extremely rich in architectural remains of great interest, suitable for sketching and measuring. In Nottingham itself there are the church of St. Mary and the Castle. In the neighbourhood of Nottingham there are the following places of interest:—Carlton Chapel; St. Leodigarius at Basford; Woodhall at Bulwel; St. Patrick's Church; and the manor-house called "Nuthall Temple," at Nuthall and Wollaton Hall. Within a few miles are Ledling, Ruddington, Ratcliffe, Bingham, and Newstead Abbey. The Minster of Southwell, with its Norman nave and wonderful Decorated chapter-house, is only about 12 miles from Nottingham. Newark is about 18 miles from Nottingham, and has in its church some of the finest oak screens in England. The lower half of the tower of this church is of the Early English Gothic style; the upper hall and the steeple are excellent examples of the Decorated period. Some picturesque half-timber is also to be found in the market-place of this town. Peterborough, and the neighbouring towns of Castor, Nassington, Oundle, Fotheringay and Brigstock, form a happy hunting-ground for the architect, and are within 30 miles of Nottingham—a distance not outside the range of the bicycle. G. A. T. M.

If "South Notts" will repeat the enquiry in regard to the water-supply to fifteen small houses which he sent us a short time ago, with further particulars, we will endeavour to answer it. A letter sent to the address given by him has been returned to us "not known."

Bricks and Mortar.

Aphorism for the Week.

Cleverness is serviceable for everything, sufficient for nothing.—Amiel.

Our Plates. No. 46, Great Marlborough Street, W., replaces a structure which unfortunately was wrecked by the failure of the party-wall during the rebuilding of the adjoining premises. The front is in red bricks with Portland stone dressings, the ground floor being faced with Aberdeen grey granite, unpolished. Messrs. Mark Patrick & Sons were the builders.—The offices of the Union Castle Company in Adderley Street, Cape Town, have been erected for Messrs. Donald Currie & Co. The whole of the ground floor and most of the upper floors are now occupied by the Union Castle Company as offices. The building is of brick, faced with Palmeit River stone, in Adderley Street, and with cement rough-cast elsewhere, Cape Town bricks being of very inferior quality. The building which stood formerly on the site had a portico or verandah the full width of the pavement and frontage, supported by fluted Doric columns of stone, with a regular entablature and balustrade. As originally designed this building had a similar portico in front to give shade to the ground floor and to foot passengers. The city authorities, with truly British perversity, declined to permit any new columns to be of a greater diameter than 8in., which would only give the type of verandah seen in the photograph on either side of the Castle Company's premises. The Company decided that it would be better to have no verandah than a cast-iron one. The roofs are slated with an American slate, the lathing is of expanded metal throughout, and the lift is worked by hydraulic pressure. Messrs. W. Dunn and R. Watson were responsible for the design of the building, and Mr. Herbert Baker, of Cape Town, for the general supervision.—The bungalow at Tunbridge Wells is proposed to be erected in the Caterham Valley of half timber and rough-cast, with red-tiled roof. The accommodation is shown by the plan on this page.

The Royal Academy. The Council of the Royal Academy who will choose the works to be exhibited this year consist of the following:—Sir Lawrence Alma-Tadema, Mr. G. F. Bodley, Mr. G. F. Frampton, Mr. J. W. Waterhouse, Mr. W. F. Yeames, Mr. Val C. Prinsep, Mr. J. MacWhirter, Mr. W. Q. Orchardson, Mr. Henry Woods and Mr. T. G. Jackson. From this it will be seen that architects will have to reckon with Mr. G. F. Bodley and Mr. T. G. Jackson. The sculptors who visit the Modelling Schools in 1903 are Mr. T. Brock, Mr. H. H. Armstead, Mr. G. J. Frampton, Mr. Goscombe John and Mr. Alfred Drury; and the students of architecture have the benefit of the advice of Mr. T. G. Jackson, Prof. Aitchison, Mr. G. F. Bodley, Mr. Belcher and Mr. Aston Webb.

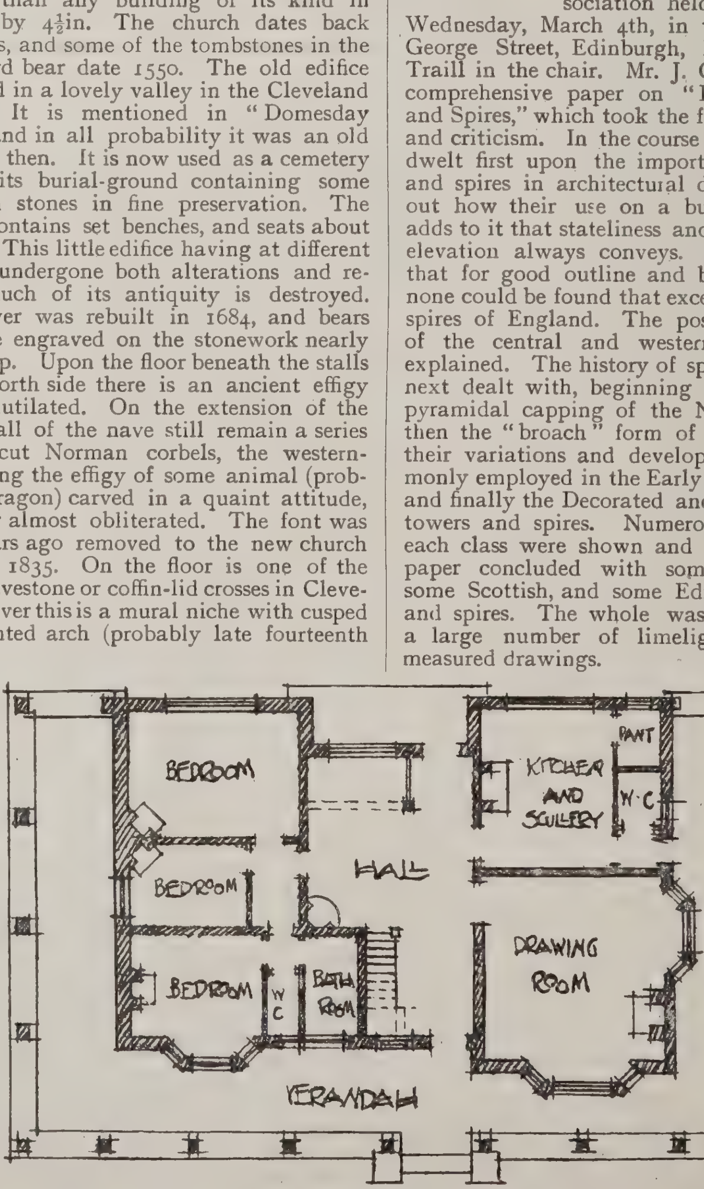
An International Building Exhibition. It is stated that all the plans for the forthcoming Building Exhibition at the Grand Palais, Paris, have been satisfactory arranged. The exhibition will be open to all nations, and it is asserted that Great Britain, Belgium and Germany have taken particular interest in the proposed show. Belgium, which has paid much attention of late to the erection of dwellings at moderate cost, both for artizans and others, will send the best plans and information she possesses on that subject, and the same may also be said on behalf of Great Britain. The success of the coming "Exposition du Bâtiment" appears to be already assured. The display of exhibits from all quarters of the globe is certain to offer a curious sight from the technical and artistic point of view, while from the social one it may contribute greatly to the solving of a problem occupying all civilised countries. The date of the opening of the exhibition is not yet known.

The Exeter Cathedral Glass. The Society of Antiquaries strongly resents the proposal to remove Peckitt's glass in the west window of Exeter Cathedral and replace it by a memorial to the late Archbishop Temple. They contend that although it may not be "of the highest quality as stained glass, yet it forms a milestone in the history of the art, and as such is deserving of respect. . . . The window is said to be in bad taste. But surely in dealing with a fabric of such slow growth as a cathedral, this is dangerous ground to take. Are the seventeenth-century and later monuments in Westminster Abbey in 'good taste'? . . If the Dean and Chapter of Exeter sweep away all parts of the structure in their cathedral that may not seem to them to be in the best of taste, they will go far to destroy the story of the building and will have an account to settle with posterity."

The Smallest Church in England. The smallest church in England is claimed to be part of that of the village church at Upleatham, in North Yorkshire. It measures only 17ft. 9in. by 13ft. A Frenchman who has measured the church says it is smaller than any building of its kind in France by 4½in. The church dates back 900 years, and some of the tombstones in the graveyard bear date 1550. The old edifice is nestled in a lovely valley in the Cleveland district. It is mentioned in "Domesday Book," and in all probability it was an old building then. It is now used as a cemetery chapel, its burial-ground containing some very old stones in fine preservation. The church contains set benches, and seats about twenty. This little edifice having at different periods undergone both alterations and repairs, much of its antiquity is destroyed. The tower was rebuilt in 1684, and bears that date engraved on the stonework nearly at the top. Upon the floor beneath the stalls on the north side there is an ancient effigy much mutilated. On the extension of the north wall of the nave still remain a series of well-cut Norman corbels, the westernmost being the effigy of some animal (probably a dragon) carved in a quaint attitude, but now almost obliterated. The font was some years ago removed to the new church built in 1835. On the floor is one of the finest gravestone or coffin-lid crosses in Cleveland. Over this is a mural niche with cusped and pointed arch (probably late fourteenth century).

Roman Finds. In the course of the construction of the new road at Watermoor, Messrs. G. F. & E. Newcombe, the contractors (the work being done under the direction of Mr. V. A. Lawson, architect), discovered some relics of the Roman occupation of Cirencester. Not much more than 1ft. below the surface of the ground was discovered the massive stone kerb of what proved to be a singularly complete Roman well, about 12ft. deep, the facing stones of which had been carefully worked concave. The kerb or topstone of the well was cut out of a solid block. The new road was also found to cross, almost at right angles, and exactly at the spot pointed out by Mr. Wilfred Cripps, C.B., from his plan of the Roman town, the continuation of the great Foss Road running straight through the town, roughly speaking from north to south. The section uncovered by the operations shows it to be a very substantially made road, about 38ft. wide, while the metal is at least 8ft. thick. There was barely 1ft. of soil above the surface of the road. Mr. Wilfred Cripps is having excavations made in the garden of Chester Lodge, and has come upon the walls of some considerable Roman buildings, situated in the locality which the presence of basilica and other erections marks as the forum or market-place of the Roman city.

Towers and Spires. The Associate Section of the Edinburgh Architectural Association held a meeting on Wednesday, March 4th, in the rooms, 117, George Street, Edinburgh, Mr. J. Douglas Traill in the chair. Mr. J. Gillespie read a comprehensive paper on "English Towers and Spires," which took the form of a review and criticism. In the course of his paper he dwelt first upon the importance of towers and spires in architectural design, pointing out how their use on a building at once adds to it that stateliness and dignity which elevation always conveys. He contended that for good outline and beauty of detail none could be found that excelled the Gothic spires of England. The position and uses of the central and western towers were explained. The history of spire-growth was next dealt with, beginning with the simple pyramidal capping of the Norman Period, then the "broach" form of spires, with all their variations and developments so commonly employed in the Early English period, and finally the Decorated and Perpendicular towers and spires. Numerous examples of each class were shown and discussed. The paper concluded with some Renaissance, some Scottish, and some Edinburgh towers and spires. The whole was illustrated by a large number of limelight views and measured drawings.



PROPOSED BUNGALOW AT TUNBRIDGE WELLS: GROUND-FLOOR PLAN.
A. J. HARDWICK, ARCHITECT.

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Supplement to
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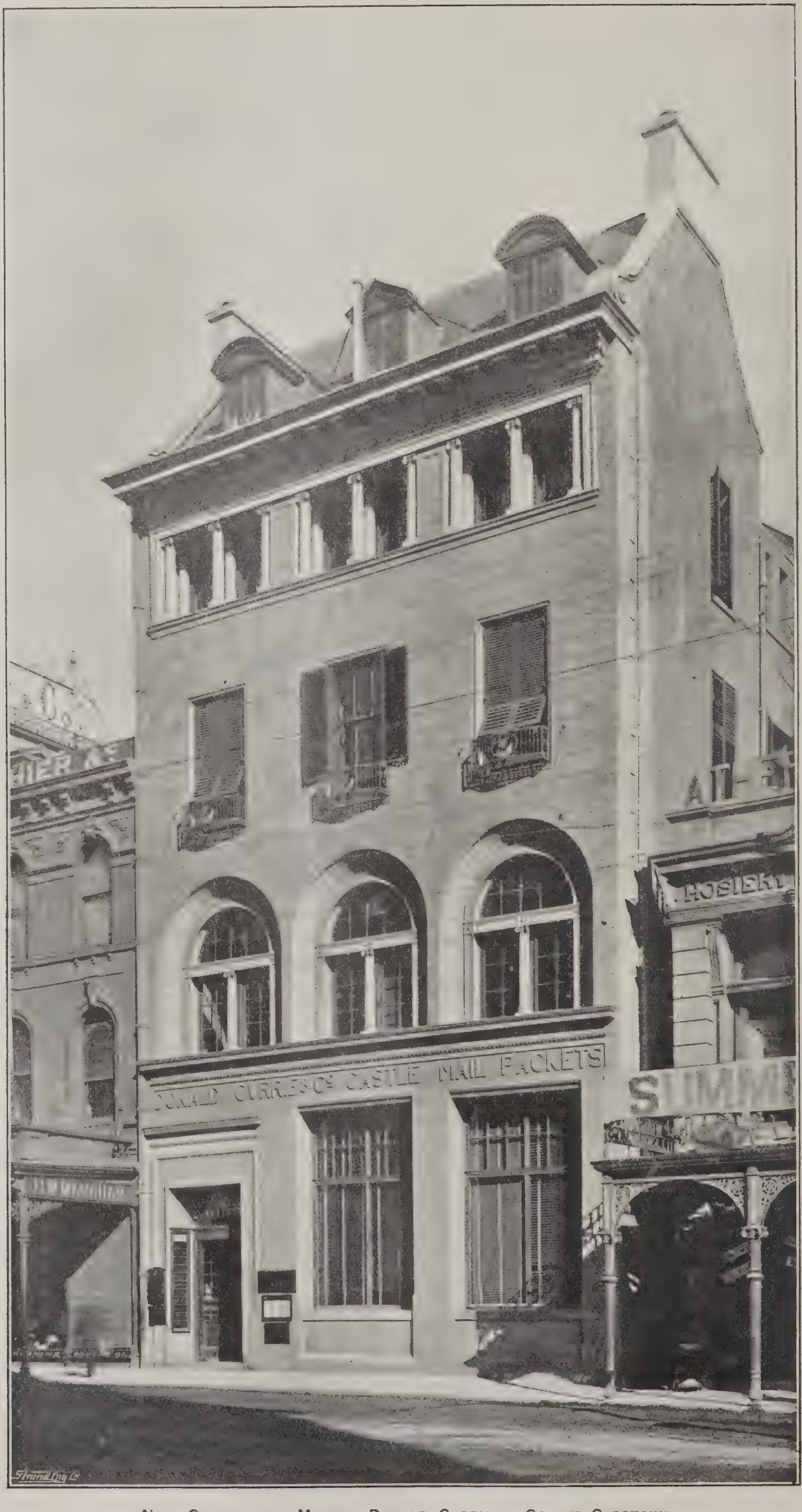
Wednesday, March 11th, 1903.



New Offices for Messrs. Donald Currie & Co. at Capetown.
W. Dunn and R. Watson Architects.

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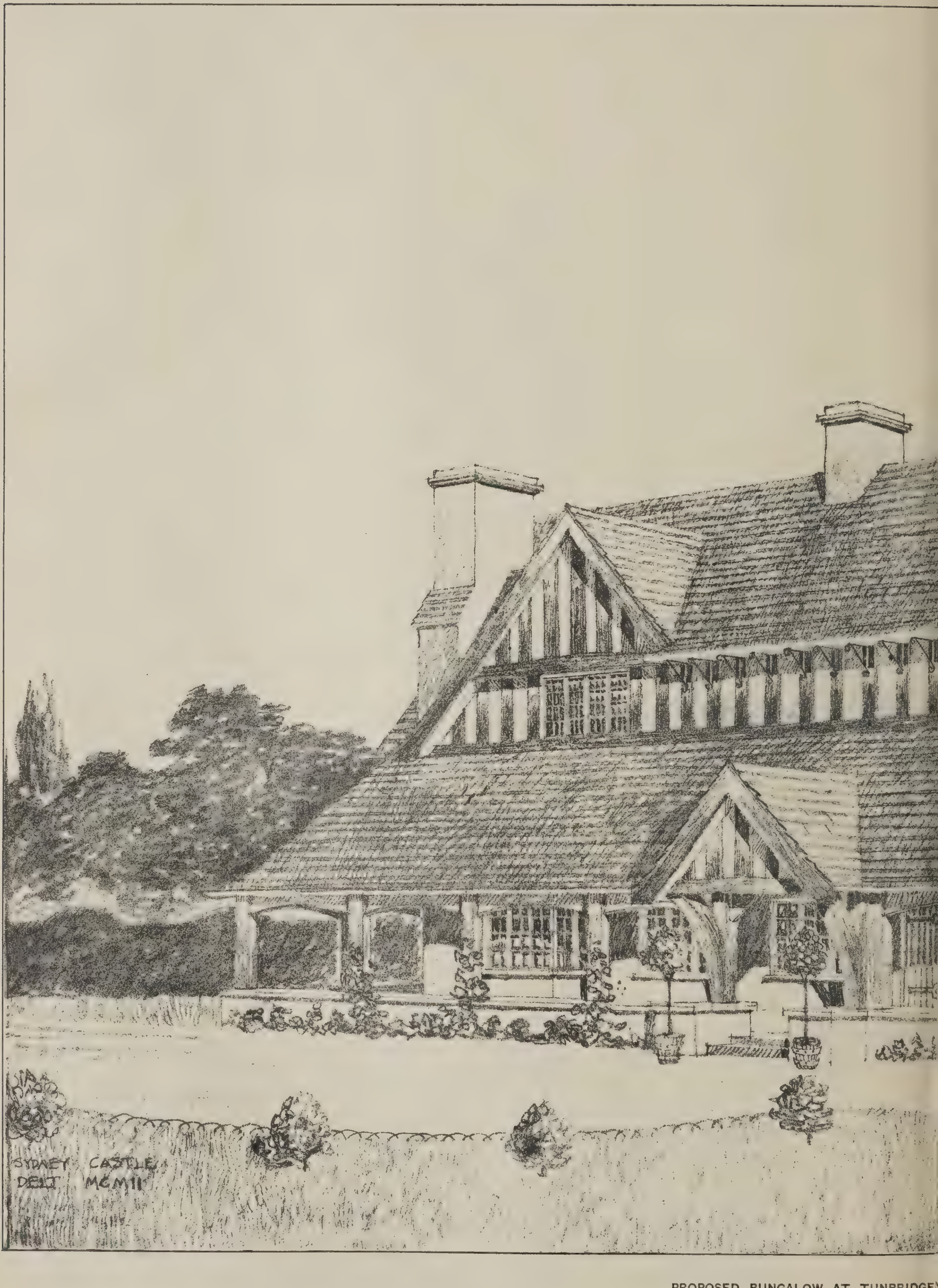
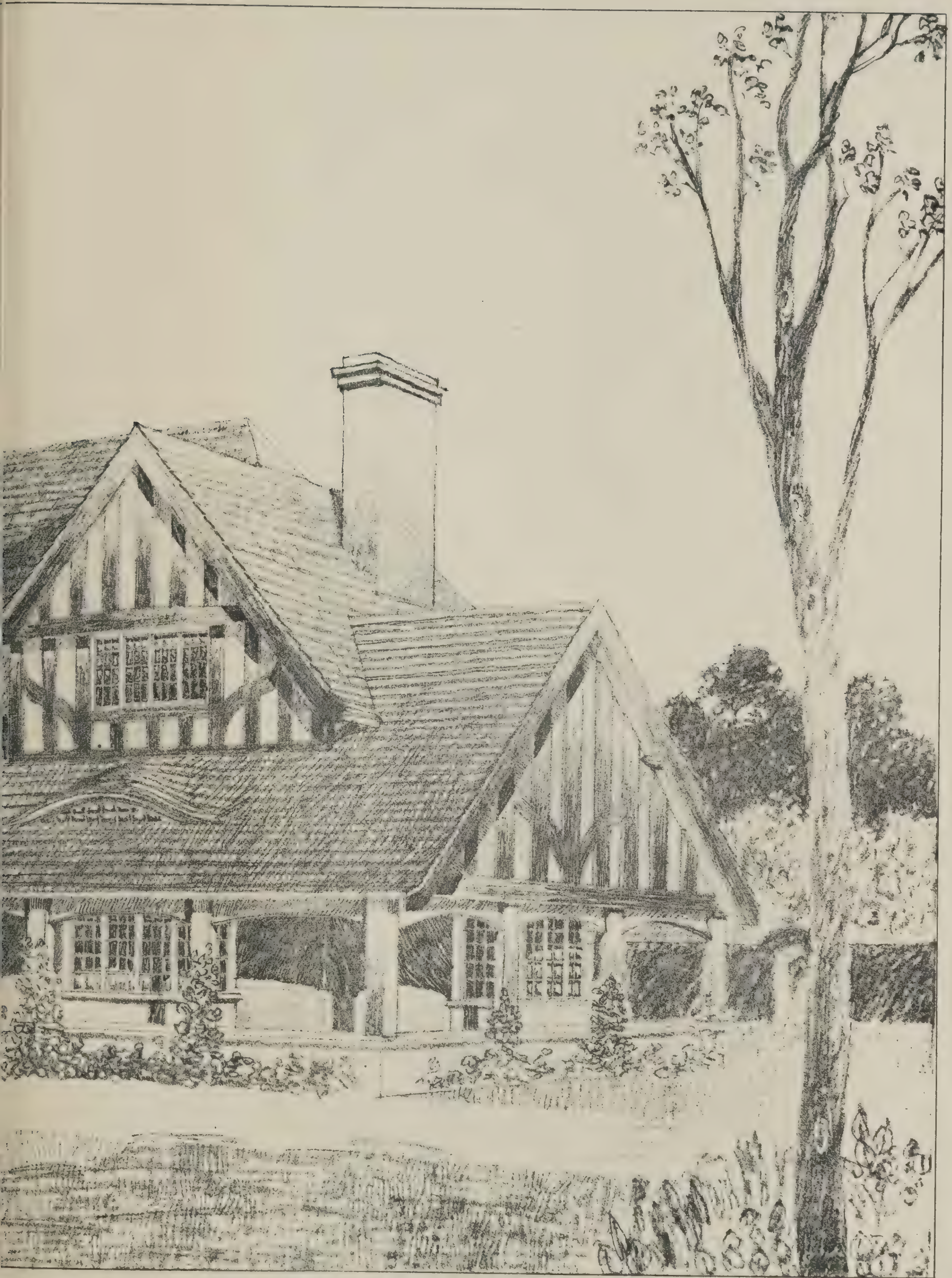


PROPOSED BUNGALOW AT TUNBRIDGE



S. A. JESSOP HARDWICK, ARCHITECT.

"INK-PHOTO." R. J. EVERETT & SONS, 56 LUDGATE HILL, E.C.

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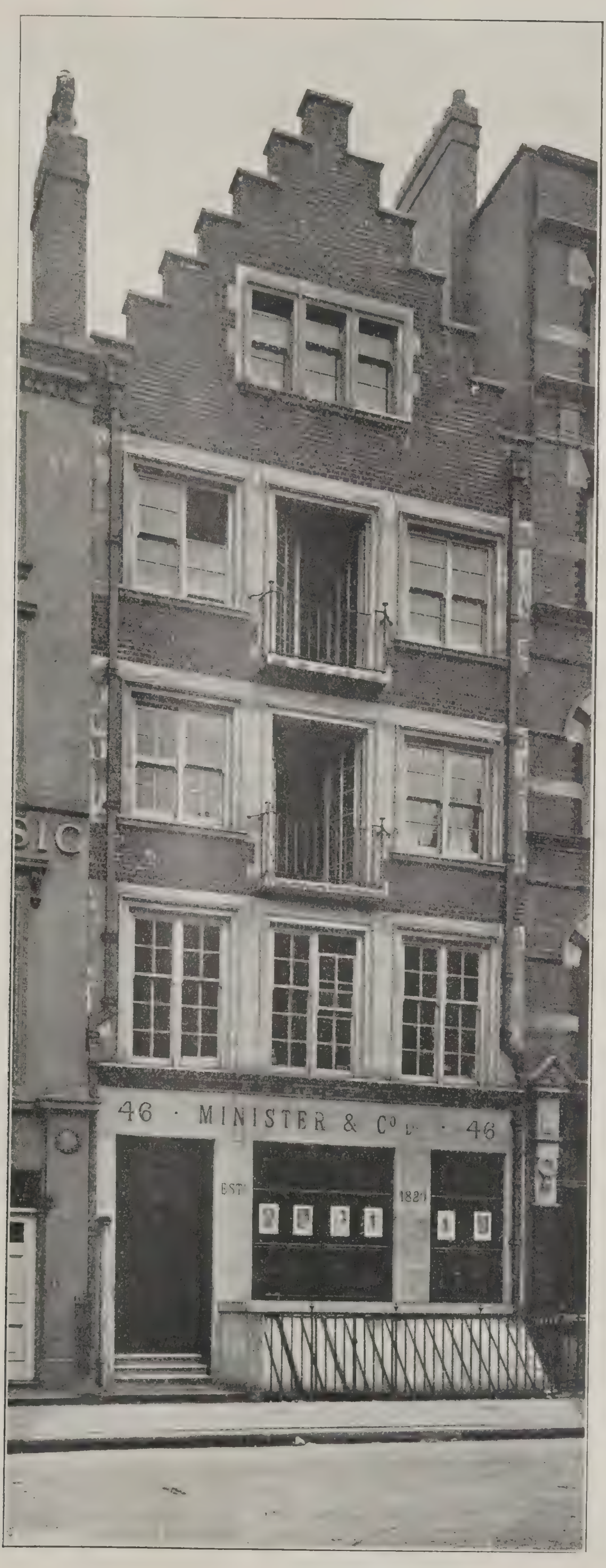

No. 46, Great Marlborough Street, London, W.
W. Dunn and R. Watson, Architects.

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Construction Notes.

A New Limestone. The selection of a building stone for any particular work is one of the most important duties of an architect or engineer, requiring expert knowledge, careful consideration of existing buildings, the state of the quarry at the time, the best beds, and most watchful inspection at all times. When stone from a newly-opened quarry is to be decided upon the difficulties are enormously increased, for there is no fund of experience in long-executed buildings to go to. It is not to be wondered at, therefore, that there is a remarkable sameness and a small range in the varieties of stone used in large buildings and monumental structures. In London Portland holds chief sway; used by Wren in his City churches and St. Paul's, we have a standing example of its splendid qualities, but all depends upon the quarry bed from which it is taken and the weathering to which it is there subjected. Years ago Craigleith—a sandstone—was largely used in important buildings—the Bank of England, the Royal Exchange, British Museum, the General Post-Office and the Stock Exchange being examples, but the exhaustion of the best beds at the quarry and its costly carriage from Edinburgh have led to its general abandonment. But it is not my purpose to speak of these stones. The mention of them merely serves to call attention to the welcome which must be accorded to any addition to our stock of building stones worthy to rank as suitable for the best work. I do not think I am going too far in claiming this for the Edithweston Freestone. The oölitic limestones of Northampton and Lincolnshire are very remarkable. At the famous Bornack quarries, in Northamptonshire, from which stone was obtained for Peterborough Cathedral, all the best beds are unfortunately now worked out. Close to Bornack are the quarries of Ancaster in Lincolnshire and Ketton in Rutland. Weldon in Northamptonshire is another old quarry. Ketton stone has been used for a number of important buildings, among which may be mentioned St. Dunstan's Church in Fleet Street, London; the modern part of Peterborough and Ely Cathedrals; Sandringham Hall; St. Pancras Railway Station, and the restoration of Westminster Hall. Stone from the best beds at Ketton is obtained with more difficulty every year, and there is danger of its becoming exhausted. This has been compensated however by the Edithweston Freestone Quarries, opened by Major Craithwaite about five years ago, and since worked and managed by his agents, Messrs. Woodford & Wing, of Stamford. This bed of freestones, though not actually in Ketton parish, forms part of the same hill and lies only 500yds. from and at the same level as the famous old Ketton quarries, and the stone seems to be really a reproduction of the best old "Ketton" which was so extensively used in the past. The stone is of a beautiful cream colour and fine even texture, is easily worked, the labour being about equal to Bath, Ancaster, Beer or Ham Hill, and a very fine arris can be obtained. It is stated that it need not be fixed on its natural bed, but this is inadvisable with any stone. It is an oölite (the name is derived from the Greek word signifying "egg-stone") composed of egg-like grains of carbonate of lime (each in section of several concentric rings like an onion), similar to a fish's roe, and the grains of somewhat larger size than Caen stone constituting what is called a "roe stone." Edithweston stone has been supplied for the stonework of the following recently-erected buildings: new Cemetery Chapel, Leicester; Hospital for Infectious Diseases, Leicester; London City and Midland Banks at Nuneaton and Peterborough; Midland Counties and Barclay Co.'s Banks at Peterborough; and the Grand Hotel, Southwold. The nearest station is Ketton, one mile distant on the Midland Railway, and the price is 2s. 1d. per cub. ft. on rail at Ketton, or 2s. 6d. at London termini.

A New Decorative Process. Within the last few years a new process of decoration has been developed in Austria and Germany which enables some very beautiful effects to be obtained. The process primarily consists in using a special cement. This cement is supplied as a thick liquid; it has no free lime in its composition which would be destructive to colours, and does not adhere to the fingers, for it dries without the stickiness of a paint or varnish. This cement quickly thickens when exposed to the air and can be used in any degree of consistency, being available for modelling after some time. Colours may be mixed with it, and in the more liquid condition it may be used with a brush for painting in relief like gesso. It is used on the Continent, however, in quite a new manner and certainly to its greatest advantage. The process consists in taking string of any desired thickness and covering and soaking it with the cement by drawing it through it and then using the string to form the boundaries of any pattern on any surface by sticking it down. The cement impregnates the substance of the string, preserving it against damp and decay. The spaces between the string boundaries may now be filled up in any way with the cement and modelled to gain any effect. It will be seen at once that the use of the string to form the boundaries enables work to be done quickly, and for any linear decorative forms the process is of course essentially easy and appropriate. Cloth, wool, tow or other material, can be soaked in the cement in the same way and used to model up forms. This is a feature of the process which is made much of in Germany, for the cloth is cut in a particular shape, say, for a lily, and then a number of workmen can be easily trained to arrange it in form so as to look exactly like modelling in low relief. When the cloth has adhered it is brushed over with the liquid cement to obtain an even surface. When dry, the surface can be coloured or painted upon, ordinary oil colours being a very suitable medium, sinking into the plaster-like cement, giving a fine dull colour, or, by varnishing, a shiny effect. The process is an artistic one, for it is easier to make everything different than to make all alike. One use which is made of the process on the Continent deserves special attention; modelled corner-pieces, decorated with colours, are supplied to ceilings and affixed in position and connected to each other by means of lines of string, which may be gilded or coloured with any other tint. Of course the cost of a few extra yards of string is immaterial, so that a large ceiling costs no more than a small one. The whole cost of a ceiling decorated in this manner is about £2, or of course more if more elaborate, but the superiority of this method for artistic appearance over the miserable plaster ceilings with stock plaster-cast ornaments in our houses is immense. Mr. A. Strauss-Collin, of Bush Lane House, Cannon Street, E.C., is exploiting the process in this country, and supplies the cement, giving full instructions, or will furnish decorative designs, panels, &c. The ease and quickness of the process has in foreign lands led to excesses, and much of the awful L'Art Nouveau interior decoration may be traced to it, and in particular the stringiness or lininess of the forms; but, of course, everything can be carried to excess. There is nothing against the process itself, which offers many advantages and should be largely used; all depends upon the artistic taste and ability of the designer. H. K. D.

Builders' Notes.

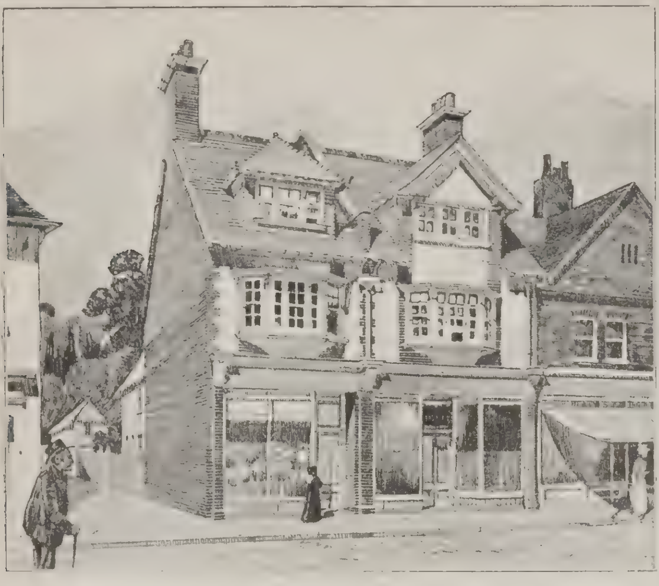
London Master-Builders' Association: New Officers.—President, Mr. Ernest J. Brown; senior vice-president, Mr. James Carmichael; junior vice-president, Mr. Frederick Higgs; treasurer, Mr. John Greenwood.

The Isolation Hospital, Etwall, has been supplied by Messrs. E. H. Shorland & Brother, of Manchester, with their double-fronted patent Manchester stoves with descending smoke flues and special inlet panels.

The Will of Mr. A. W. Spencer, of South Kensington, a partner in the firm of Spencer, Santo & Co., the builders of the New India Office, has been proved, the value of the estate being £1,790.

Plumbing.—An indenture or agreement of apprenticeship framed by the Plumbers' Apprenticeship Board of London has been adopted in substance by the National Association of Master Plumbers and the United Operative Plumbers' Association of Great Britain and Ireland, as well as by the London Master-Builders' Association. The material points of agreement are:—(*a*) The art of sanitary plumbing taught under the indenture is defined as "technical knowledge of water fittings and other sanitary appliances, and skill to construct and adjust the same in such manner as to prevent the contamination of air or water in dwelling-houses or other buildings by emations from drains and sewers"; (*b*) the apprentice is required to attend approved evening classes of technical instruction; and (*c*) to attend periodical examinations in technical knowledge and workmanship during the term, the final examination qualifying for registration by the Plumbers' Company or any statutory body established for maintaining a National Register of Plumbers in the public interest. Under the general provisions of the indenture other branches of trade may be taught, but it is required that the instruction in sanitary plumbing should conform to local and other regulations affecting the efficiency of plumbers' work in its sanitary aspects as defined. The form has been adapted to the requirements of Scottish law. Classes of instruction are provided by the local educational authorities, and the practical branches of the examinations are conducted under the regulations of the Plumbers' Company by joint boards, including employers and workmen.

Menai Suspension Bridge during the gale last Friday week was completely lifted off its bearings. The bridge, at a height of some 200ft. and for a stretch of nearly 600ft., spans the Menai Straits and connects the county of Carnarvon with the island of Anglesea. The great structure succumbed to the terrible wind-pressure which had continued for about a fortnight. Floating free from its connections with the massive stone pillars on either side of main span, to which each end of the actual "bridge" is connected, it swung and swayed violently in the hurricane. At about seven in the morning, according to the toll-keeper on the Carnarvonshire side of the Straits, the wind was about the height of its power, and looking up the bridge he saw the whole of it swing far out of its bed, as if about to part company for ever with its sustaining chains and piers. The chains, however, held stoutly, and after an instant's poise in mid-air, the bridge slowly swung back into its accustomed place, there remaining, but with constant and alarming oscillations. As the gale moderated the bridge became steadier, and traffic was resumed. This shows the fatuity which places the whole telegraphic system of the county dependent on cables passing along this bridge. It is pointed out that they could just as well have been run across the immovable tubular bridge close by, or taken by a submarine cable.



BUSINESS PREMISES, ASCOT. GEORGE HORNBLOWER, F.R.I.B.A., ARCHITECT.

LONDON BUILDING ACTS.

The Withdrawal of the Amendment Bill.

At last week's meeting of the London County Council the Parliamentary Committee submitted the following report upon the London Building Acts (Amendment) Bill :—

We have given our most careful consideration to the course to be adopted with regard to this Bill, which has now been read a first time in the House of Commons. Instructions to us to promote the Bill were given by the Council on November 4th last, and time did not permit of our ascertaining the views of the various authorities and bodies concerned before submitting the Bill to the Council for approval. We have not at the present moment been furnished with the views of some of the more important technical bodies, but, from such observations as we have received and from information which has reached us from various quarters, we regret that we are driven to conclude that the Bill will, if proceeded with in Parliament, encounter very considerable opposition. We are advised that many of the suggestions which have been received would form bases for useful amendments of the Bill in detail, and that had time permitted the Bill might with advantage have been in some particulars differently drafted. It is with great regret that we arrive at the conclusions embodied in the recommendation which we submit concerning a measure for the protection of human life and property from the perils of fire, and in doing so we are influenced by the knowledge that the Council will, with more time at its disposal, be in a position, if it adopts our recommendations, to place before Parliament in the session of 1904 a more complete and perfect measure. It is important that any step in the direction of withdrawing the Bill should be taken without delay in order that such authorities and bodies as may wish to take action with regard to the Bill may not be put to any unnecessary expense and trouble. We accordingly recommend: "(*a*) That, notwithstanding any previous resolution of the Council, a Bill to amend the London Building Acts be promoted in the next session of Parliament, instead of in the present session; and that the London Building Acts (Amendment) Bill, 1903, be not further proceeded with. (*b*) That the Bill as at present drafted be referred to the Building Act and Parliamentary Committees with a view to their advising the Council, after consultation with such persons and authorities as may be desirable, as to the ultimate form the Bill should assume."

The chairman of the Committee (Mr. Radford) refused to move the adoption of the recommendation, having disagreed with it and given notice of an amendment in favour of instructing the committee to proceed with the Bill. Thereupon a long discussion ensued, the recommendations of the committee being eventually adopted by 66 votes to 27.

In view of the withdrawal of the Bill the Mansion House meeting convened for Thursday last was not held.

In a report which they prepared at the request of the Assessment Committee of the City of London Union, Mr. W. H. Wagstaff and Mr. M. L. Saunders state :—

"It must be remembered that the process of reconstructing city premises has been going on rapidly in recent years, and from experience all new buildings, including 'the high buildings' referred to in the Bill, have been reconstructed to meet all requirements of escape in case of fire. Therefore no new or exceptional legislation is necessary, and if modifications of the Building Act of 1894 are required they can be met by a simpler Act, not retrospective as proposed. In twelve of the clauses of the Bill there is reference to discretionary power to be used by the London County Council, such as 'satisfaction,' 'reasonably practicable,' 'opinion of the Council,' 'as the Council may prescribe,' 'as the Council may think fit,' and such other phrases which appear to be most objectionable. It should be remembered that the Bill is a penal one, and all matters should be definite, and no discretionary power allowed; nor should there be any power of making by-laws. If the London County Council propose that the cost incurred in carrying out these alterations and suggestions is to be considered as money laid out upon buildings, and thereby raise the assessment thereof, then it would mean increasing the rating, whilst the buildings would themselves be far less valuable for the purpose of trade. In the second schedule attached to the Act of 1894 it is mentioned that stone and iron are fire-resisting materials; do the London County Council so regard them? This Bill is perhaps as good a specimen as could be found for giving work to the unemployed and providing employment for solicitors by unlimited litigation."

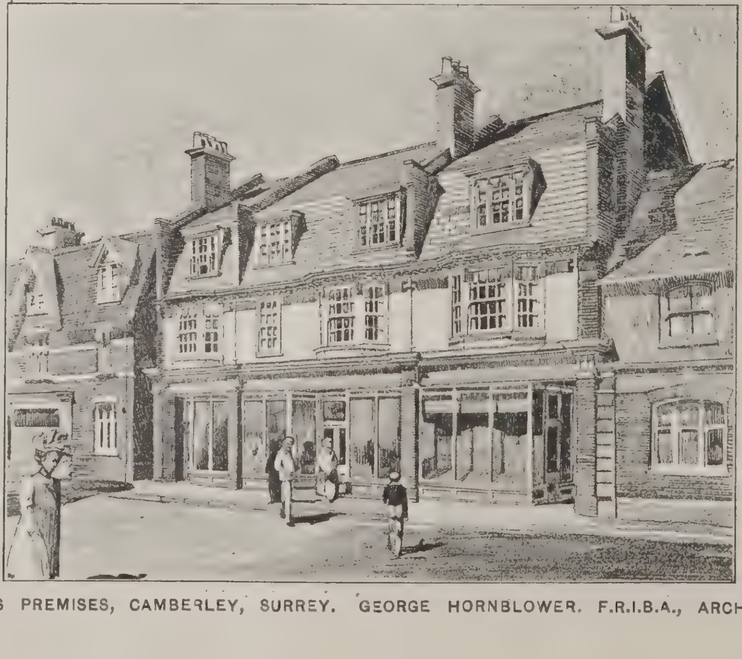
The Royal Institute of British Architects had decided to oppose the Bill.

In the House of Commons on Wednesday last the order for the second reading of the Bill was discharged and the Bill withdrawn.

At last week's meeting of the London County Council the Highways Committee recommended that a sum not exceeding £21,100 be expended on new sub-stations and workshops at New Cross and Camberwell, required in connection with the electrical working of the County Council tramways; and that the work be carried out without the intervention of a contractor. Mr. E. White, in moving that the recommendation be referred back, said the proposal was an entirely new departure, for it had always been understood that the estimate should be based on drawings, specifications and bills of quantities. Now it was proposed by the Highways Committee to estimate the price on cubing, and to pay 5 per cent. above the priced bills of quantities of the Mill Lane lodging-house. A lodging-house was a very different building from a car-shed, and he submitted that instead of an increase there ought to be a decrease in the estimate for the car-shed. Mr. Benn said the essence of the contract was rapidity of erection, and the proposal was made on the advice of their architect.—The amendment was defeated and the recommenation agreed to.

The Highways Committee recommended an expenditure of £208,000 on the construction of the tramway subway authorised between Southampton Row and Victoria Embankment. The matter was referred back.

Business Premises at Ascot and Camberley, Surrey.—These premises are built in red bricks and the fronts finished in rough-cast, with red-brick dressings. The roofs of the Ascot premises are covered with green slates and those of the Camberley premises are tiled. Mr. H. Charman, of Ascot, was the builder of the Camberley premises and of the largest shop at Ascot (which was erected on a corner site in the High road); they were carried out under the superintendence of the architect, Mr. George Hornblower, F.R.I.B.A., of 2, Devonshire Terrace, Portland Place, London, W.



BUSINESS PREMISES, CAMBERLEY, SURREY. GEORGE HORNBLOWER. F.R.I.B.A., ARCHITECT.

THE ARCHITECTURAL ASSOCIATION

COMPETITIONS.

Papers by **ALFRED W. S. CROSS** and **BULKELEY CRESWELL.**

A MEETING of the Architectural Association was held last Friday, Mr. Louis Ambler, F.R.I.B.A., vice-president, in the chair. The following gentlemen were elected members:—Messrs. Frederick J. Commin, W. Curtis Green, Walter Gilbert, Frank Jennings, Owen Dudley, George Felix N. Clay and C. F. A. Voysey. Messrs. E. J. Wellman and A. B. Yeates were reinstated members. The chairman then announced that a donation of £10 10s. towards the new premises fund had been received from the Birmingham Architectural Association. Mr. Alfred W. Cross, M.A., F.R.I.B.A., then read his paper, of which the following is a summary:—

As one who is greatly in favour of the system of obtaining designs for public buildings by means of competitions, I am, unfortunately, unable to agree with many of the views adopted by Mr. Creswell in his extremely able paper. I have had, quite recently, the pleasure of perusing an equally excellent paper on the same subject by Mr. G. H. Willoughby, of Manchester, in which its author, a strong believer in the system, as he has shown by both precept and practice, writing from a standpoint diametrically opposite to that selected by Mr. Creswell, argues in its favour, as follows:—

"From my point of view, it is a mistake to suppose that the profession can dispense with healthy, stimulating competitions. A man never knows what is in him until he has measured himself with his fellows in real honest work of this kind.

"Consider what a large field for effort is presented to our younger men at the outset of their career, when youth, with its enthusiasm and capacity for work, is so strong.

"With many the commissions which they have in hand fail to fully occupy their time. Does not the opportunity thus afforded through the medium of competitions, which is, I think, confined to our profession, create, if grasped, a lasting habit of steady, continuous application and activity—a prelude to the time when hands and head will be fully occupied on more certain work?

"Let me remind you of the endless opportunities which cross our path, through the medium of competitive problems, for the study and investigation of the many kinds of structures the architect of to-day is called upon to design."

These words of Mr. Willoughby represent with more or less exactitude the views of those architects who, while believing that competitions are desirable and tend to the advancement of architecture, are at the same time determined to do their utmost to remedy the undoubted evils connected with the competition system in vogue in this country, which evils, involving as they do many miscarriages of justice and frequent deviations from rectitude on the part of promoters and assessors, must be rooted out, and with this object in view a Society for the Reform of Competitions has been formed, and is now, I honestly believe, doing good work in its efforts to protect members of our profession against the wiles of unscrupulous promoters of competitions. But, after having made good their position with regard to promoters, competing architects should advance a step further and insist upon the employment, wherever practicable, of a jury of assessors in place of the present one-man system, which has proved to be a dismal failure. It is neither desirable nor necessary for me to enter into particulars, or to call attention to specific instances in which flagrantly unfair awards have been made, the general fact is common knowledge, and there are doubtless many members of this Association who have suffered at times from the incompetence, lack of sound judgment, call it what you will, of certain assessors.

In France, where, as a matter of course, "they manage these things better," and in America, the jury system is now almost always applied to important competitions, in the latter country with the code for the conduct of competitions presented to the American Institute of Architects at their annual convention in 1900. (Mr. Cross here read the code which was published in our issue of July 3rd, 1901.)

Whilst one may not agree absolutely with each individual clause in this exhaustive code, yet, broadly speaking, it appears to have been carefully and impartially framed alike in the interests of both promoters and competitors, and it is fundamentally sound in its insistence upon the following essentials, which should be borne in mind during the preparation of every set of conditions issued to competitors in this country.

(1) A definite pledge should be given by the promoters as to their intention to retain the services of the successful competitors.

(2) The conditions should be framed to constitute a contract between the promoters and the competitors.

(3) The drawings required should be of the simplest kind necessary for explaining the competitors' schemes.

(4) A copy of the assessor's report should be sent to every competitor.

(5) No communication, except in writing, should be allowed upon anything relating to the competition between any competitor on the one hand, and the owner or any representative of the owner, the professional adviser, or any juror, on the other.

With regard to (1), this clause is essential to the success of any properly organised competition. Promoters must be brought to understand that the payment of a premium is quite insufficient to reimburse the successful competitor for his outlay of time and money. As to (2) this proposal is an innovation as far as this country is concerned, but it is one that will form, sooner or later, an integral part of the conditions of the competitions for all public buildings. (3) has been evidently framed with the object of minimising the amount of work required from each competitor, and any experienced competing architect will vouch for its necessity. (4) Constitutes a laudable attempt to allay many of the heartburnings that almost invariably follow an award. In my opinion, it is very desirable that a copy of the assessor's report, containing the award and his critical notes on the various designs, should be issued to every competitor. I have here a copy of such a report, kindly lent to me by its author, Mr. Paul Ogden, of Manchester, which is, in my opinion, ideal in its characteristics. It contains photographic reproductions of all the plans submitted, together with the assessor's criticism of each design, by which competitors are enabled to obtain a very fair insight into the reasons governing the award.

The last stipulation (5), although it might perhaps be strengthened, is, I think, a wise one as under our haphazard system, or rather want of system a competitor is often tacitly allowed to obtain special information from individual members of the promoter's committee or from officials and subordinates connected with them, and this course of action is to be depreciated, as the contest between the competing architects should be fought on the information conveyed by the conditions, and by the subsequent replies to questions and by that information alone.

On the whole, I think, gentlemen, you will agree with me that the problem relative to the conduct of architectural competitions having been successfully solved by the American architects, it is the duty of all members of our profession in this country to support the movement that has recently been initiated to ensure a similarly satisfactory result here. By doing so you will be upholding the dignity of the profession, for what other body of educated men receives the insults that are constantly offered to us by promoters of competitions, who often indeed advertise for designs for buildings which they have not the slightest intention of carrying out, or for which they have actually selected their architect before the issue of the conditions for their so-called competition. To put it briefly, competing architects must sift the good competitions from the bad ones, and protect themselves against unfair or incompetent assessors by insisting upon the introduction of the jury system of assessing. The only argument I have heard advanced, so far, against the appointment of jurors is that emanating, I presume, from those architects who have too great an appreciation of the value of the fees obtainable under the present system of assessing to make them desire any change, to the effect that the excessive cost of the jury system militates against its adoption, but if—as in America—no first premium be awarded, and the definite commission to carry out the work be substituted, there would not be apparently any insuperable difficulty in providing the necessary funds for the payment of three or four jurors.

Mr. Bulkeley Creswell then read his paper, of which the following is a summary:—

The whole subject of competitions in almost the same aspects and involving the same dilemmas, the same difficulties, the same differences of opinion, has beset our profession like an incubus, and has provoked lengthy discussions, protracted correspondence in the professional journals, special commissions, sworn fraternities and self-denying brotherhoods continuously for nearly 100 years. I can assure anyone of you who cares to refer to the records which will be found within the walls of this building that he will be truly amazed at the huge amount of energy, mental activity, arguments, research and classification of facts which have been brought to bear on this subject and, I may add, by some of the most conspicuous and able men of their day; and yet, although in the particular of professional assessors, promoters of competitions have fallen partially in line with our views, the main question remains no nearer solution, and the confusion in the conduct of competitions is perhaps as great as it ever was.

I would remind you that competitions do not in any way influence the number of buildings erected. Thence the whole mechanism of competitions effects nothing more than the selection of those particular architects who shall be appointed to execute certain particular buildings. Their whole justification rests then on the substantiation of the fact that the process of selecting architects by competition is better for the profession and for the national architecture than if the architect were selected by his reputation or by his proved fitness for the work. The question is *not* whether competitions afford a short cut to notoriety for individuals, but whether, taken as a whole, that system of selection is the best. I am not going to urge the reasons which convince me that the competitive method of selection is a bad method, as a frequent usage, and bad in all cases, except for limited competitions, but I will ask your permission to quote the mature opinion of the late Professor Kerr on this subject. He is reported to have spoken these words in 1871: "The only conclusion I can arrive at with any regard for common-sense is that the system of architectural competition is radically unsound in principle, and in practice most prejudical to the profession of architects, both financially and morally. Whether it benefits the public in any way may be for a moment questioned, but even on this point I believe the answer must be eventually in the negative . . . . I have never known any man succeed in establishing by competition any reputation which he would not have better acquired without it, except occasionally a bad reputation, which, but for competition, he might fortunately have been able to escape. I know of no other temptation in business so subtle as that which assails, as I think, a high-minded man when involved in architectural competition, and especially if he be successful. I know of men who have succeeded by competing in attaining to the promise of a position which they were not qualified to hold, but they have never been able to retain it, and have in several cases been ruined in their legitimate prospects by the consequences of such hasty and fallacious good fortune. I do not hesitate to say that competition success leads generally to personal and public disrespect; and this not through jealousy alone or personal offence, but by reason of the ordinary estimate of the qualities by which alone such success can be obtained."

I will remind you at what cost and by what burdening of ourselves do we acquiesce in this system of competitions. There are about thirty-six unlimited public competitions advertized yearly in England alone. The value of the average building is about £9,000, the number of competitors about forty, and the value of the first premium about £56 (with further premiums aggregating to £52). In a competition for a building costing £9,000 the drawings would cost each competitor between £2 and £800 (my own personal estimate is £30, which seems a moderate one), so that we may consider the cost of producing the drawings would be £1,200, which is near three times the sum which would be paid by the promoters by way of commission to the architect for designing and carrying out the works. I have found that the value of buildings advertized in the years 1894 and 1895 was £540,000, which is a sum of £270,000 in each year. I have it on the best authority that at least half the number of architectural competitions are not advertized in the London papers, so that we may decide that the value of buildings advertized in competition in one year in England amounts to no less than half a million. The cost of producing drawings in respect of these buildings, deduced from the figures I have already given you, is £65,000, estimating the average competition at £9,000.

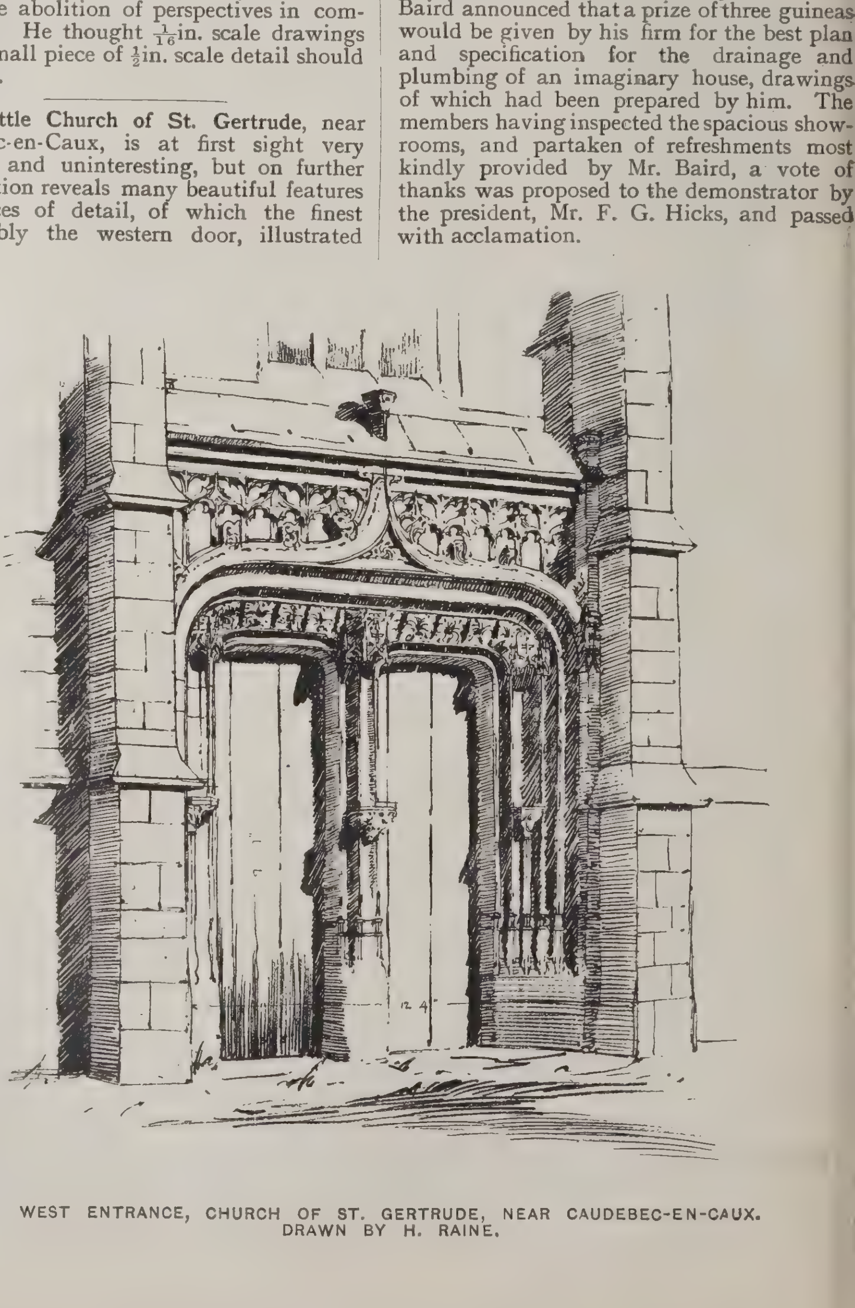
I once heard a young man referring to competitions as the "young man's friend." What he wanted to say was, "I am a young man and have just won a competition." It is exactly this personal, circumscribed, prejudiced attitude towards competitions which has kept us all these eighty years and more in hopeless quandary. The framing of competitions and the enactment of competitions is, as I would insist, purely a matter of business and of commercial enterprise. The conduct of a public or limited competition is clearly of a matter of contract, and it is the business of each party to see that his interests are properly protected in the terms of that contract. It is, therefore, weak and futile for competitors persistently to cry out and protest when they find that they have the worst of the bargain.

The 5 per cent. commission is stipulated to include quantities or extraordinary expenses in 16 per cent. of competitions. The premiated drawings are to be the property of the promoters in 77 per cent.; the written rules, and the unwritten rules of the profession are frankly ignored, and we give our approval to this state of affairs in the most emphatic manner possible and proceed to keep this monstrous thing alive and healthy among us in the face of rebuffs and affronts. The very assessors who are selected from the pick of us to advise the promoters, themselves become parties to and elaborators of these very usages, which we have never found words enough to deplore and execrate.

What I wish to lead up to is the conclusion that the impracticable and unfair qualities of public architectural competitions as now conducted is not to be laid to the charge of the people who promote them, but is to be entirely laid to the charge of ourselves, who have in all particulars and details made the procedure, traditions and the conduct of competitions just exactly as they are and exist in every respect and in every particular. So surely as we declare that we will be parties to no competitions of which the conditions are unreasonable, ambiguous or incompatible with personal or professional dignity, straightway such competitions will cease to exist. If we cannot keep off unruly competitions by any other means, let us take the pledge, let us join a certain active society lately started, and foreswear competitions unless they are as we hold they should be.

A discussion followed in which Messrs. H. W. Wills, W. H. Seth-Smith, Bramwell Thomas, William Pite, John Murray and Louis Ambler took part, the first two named proposing and seconding the vote of thanks. A letter from Mr. Sidney R. J. Smith in urged the abolition of perspectives in competitions. He thought $\frac{1}{16}$in. scale drawings with a small piece of $\frac{1}{2}$in. scale detail should be ample.

The little Church of St. Gertrude, near Caudebec-en-Caux, is at first sight very ordinary and uninteresting, but on further examination reveals many beautiful features and pieces of detail, of which the finest is probably the western door, illustrated below.



WEST ENTRANCE, CHURCH OF ST. GERTRUDE, NEAR CAUDEBEC-EN-CAUX.
DRAWN BY H. RAINE.

A.A. OF IRELAND.

THE eighth technical demonstration, on House Plumbing and Drainage, in connection with this Association was given in the workshops of Mr. William Baird, 12, Lower Abbey Street, Dublin, on Friday afternoon last. Mr. Thomas Baird acted as demonstrator, and explained the various methods employed in the trade with the greatest clearness and lucidity. Mr. Baird commenced by sketching the types of drains in use in the olden time before the advent of the Public Health Act, some formed with an inverted ridge-tile, and others through which a man could walk with ease, and which have since been effectually supplanted by a 6in. fireclay pipe. Various kinds of earthenware and iron drainage pipes were then exhibited and jointed by a practical drain-layer. Having been shown the application and construction of traps, access appliances, manholes and Armstrong junctions, samples of different sorts of pipe used in house plumbing, of lead, copper and gun-barrel, were inspected by the students. A wiped joint was also made, the approved connection for copper hot-water fittings. The members were much interested in the samples showing the defects caused by faults in the manufacture, and through disadvantageous circumstances. The best connections between sanitary fittings and soil-pipes were shown by examples, and usual defects explained. Mr. Baird announced that a prize of three guineas would be given by his firm for the best plan and specification for the drainage and plumbing of an imaginary house, drawings of which had been prepared by him. The members having inspected the spacious showrooms, and partaken of refreshments most kindly provided by Mr. Baird, a vote of thanks was proposed to the demonstrator by the president, Mr. F. G. Hicks, and passed with acclamation.

Correspondence.

Chepping Wycombe Town Hall Competition.

To the Editor of The Builders' Journal.

London, W.

Sir,—I am desired by the president of the Royal Institute of British Architects to ask you kindly to give publicity to the fact that the Corporation of Chepping Wycombe having altered their conditions to meet his views by adding to clause 3, after the words "themselves prefer," the words "but it is the intention and wish of the Corporation to accept the assessor's award unless there should appear any valid reason to the contrary," and having extended the time for the delivery of designs to April 4th, he has consented now to nominate an assessor.—Yours truly,

W. LOCKE, Secretary, R.I.B.A.

Middleton Church, Lancs.

To the Editor of The Builders' Journal.

London, S.W.

Sir,—Referring to the enquiry on p. 27 of your issue for February 25th, I would advise "Probationer, Todmorden," to visit Middleton Church (Lancashire), which I think is the nearest church to Todmorden containing any Gothic details worth measuring. It is Perpendicular work, and the greater part of it is in a good state of preservation. There is a very fine south porch and doorway worth measuring, although some of the mouldings and external ornament are not very clear. The church also contains a beautiful oak screen separating the nave from the chancel, which has some bold and luxuriant carving, interspersed with the arms of alliance of the Asshetons, who built most of the fabric, as indicated by an inscription on the south side of the church. There are also a few good bench-ends and some beautiful carving to the organ screen. In the window at the east end of the south aisle is a fine head of a bishop, and in the south chancel window is the representation in stained glass of a procession of archers on their way to Flodden Field, led by Richard Assheton of Middleton and their priest. The date of the glass is supposed to be 1515. The tower of Middleton Church is surmounted by a picturesque wooden four-gabled roof. Drawings of the church were submitted some years ago for one of the Institute prizes, but the competitor was not successful.—Yours truly.

W. EATON, A.R.I.B.A.

Licences for Making Valuations.

To the Editor of The Builders' Journal.

York.

Sir,—We note the answers as to architects taking out a licence for valuations, &c., in the last two issues of your journal. This is a question in which we are interested, as we have had considerable correspondence with the Inland Revenue authorities on the matter. We pointed out that according to a decision by Lord Ellenborough, as mentioned in Alpe's work on the Stamp Acts, we should not require a licence where the valuation was for the information of one party only, and that it was in no way binding, and this seems to be the view generally held. We also quoted Macey's "Conditions of Contract," but were informed that Lord Ellenborough's decision was overruled by a later Act; and in their final letter, dated September 8th, 1902, the Inland Revenue authorities stated "that an architect or other person, not licensed as an auctioneer or house agent, who, for fee or reward, makes a practice of valuing property or any interest therein, whether for probate or otherwise, and whether binding on parties or not, or who makes any appraisement liable to stamp duty, requires an appraiser's licence."

We also asked the secretary of the R I.B.A. as to the practice among architects, and in his reply he says: "As far as I can make out, most architects do odd valuations from time to time, without taking out an appraiser's licence, but this is at their own risk, and if the Inland Revenue authorities summon them to take out a licence, the right seems clearly to be with the Inland Revenue authorities." We are also told at the local Inland Revenue offices that as partners we must each take out the licence if we sign a valuation as a firm.

It will be noted that on the official answer the words "makes a practice" occur. Possibly they do not intend to press the matter if anyone has very few valuations, but in any case the matter is rather unsatisfactory, and as far as we can gather a great many architects are liable to be dealt with by the authorities, though we know of no case where they have been proceeded against.—Yours truly, HORNSEY & MONKMAN.

Glasgow Municipal Buildings: Machine- and Hand-cut Stone.

To the Editor of The Builders' Journal.

London, N.

Sir,—I notice in your issue for January 21st last a letter from Mr. William Burnett in which he endeavours to show that the Polmaise quarrystone which was used on three sides of the Glasgow Municipal Buildings is a durable stone, and supports his views with one instance of stone from the same quarry being used about twenty years previously (1863), when Col. Murray built Teuchadam Castle: and he attributes the cause of the decay of the stone on the Municipal Buildings to its having been cut by machinery, whereas that used by Col. Murray was hand-cut. I believe the question of hand *v.* machine cutting of stone is a very disputed point, some of our best engineers being of opinion that it is of not so much moment as that a good stone is chosen and laid with its proper face down.

I must differ from Mr. Burnett when he states that the stone used in the Glasgow Municipal Buildings came from the same quarry as that for Teuchadam Castle; twenty years is a good span, and I should rather think the stone came from a new quarry close by. But, assuming it did come from the same quarry, it does not follow that because one portion of a bed is found firm and durable a neighbouring portion may be so; the contrary is often the case; therefore for an important building it should have been properly tested and weathered. It may of interest to recall the fact that at the time the Municipal Buildings were about to be started there was an outcry by Glasgow architects as to the stone to be used. The smoke-laden atmosphere is no doubt the cause of some of the decay; but why soft and questionable freestones continue to be used by the authorities, not only in Glasgow but in other towns, is a mystery.

I should be glad to know the names of a few buildings in any districts where either the Polmaise or Dunmore quarry stones have been used; where either has been used in London; whether the part of the Glasgow Municipal Buildings under repair is where Dunmore quarry stone was used; and what stone was used in the more modern part of the old Municipal Buildings in Ingram Street, Glasgow.—Yours truly, H. W. E.

To the Editor of The Builders' Journal.

Stenhousemuir.

Sir,—In reply to "H. W. E." allow me to say that the Municipal Buildings and Teuchadam Castle are built from the same section of Polmaise quarry. True, there is now another section, but as the original could not cut away the public road the new section was started thirteen years ago on the other side of the road. The stone is seldom used now, however, although still plentiful, as it is harder to cut and more expensive to work. But it still weathers well when used. Regarding the testing of the stone, "H. W. E." has surely made some mistake, as nearly all the important buildings erected in Glasgow, Edinburgh and other towns in Scotland about this time were built of either Polmaise or Dunmore quarrystone. As an instance, I may say that in both of these quarries nearly 100 men were employed about that time. There was one notable building which might have been then examined, namely, St. Mary's Cathedral, Edinburgh, which took seven years to build and was finished, I think, in 1878. This building is weathering well, and not a bad stone is visible.

I quite agree that too little attention is paid regarding the laying of stones. There are far too many laid on the cant, where they do not weather so well.

The following are a few buildings built from these quarries:—St. Mary's Cathedral, Edinburgh; Comely Bank Poorhouse and Hospital, Edinburgh; Gilmorehill College, Glasgow; Dunblane Hydropathic; Blair Drummond Castle; Westquarter House, Falkirk; Stirling Town Hall; National Bank, Stirling; British Linen Co.'s Bank, Stirling; in fact, nearly all the buildings of note in Stirling, Bridge of Allan, Dunblane, Callander, and numerous others than those mentioned in Glasgow and Edinburgh which have been built since the quarry opened, have been built of these stones.

The only building where I am sure Dunmore stone was used is that erected for Messrs. Chambers, publishers, in Paternoster Row in 1867–8. As regards the third question, both Dunmore and Polmaise stones are under repair. I think it is Giffnock quarry stone which was used in the Ingram Street Buildings.

In conclusion, I may also say that Polmaise stone was used in the building of the Carron Company's blast furnaces, and stood the intense heat for from thirteen to sixteen years, whereas the brick blocks now used only stand at most seven years. The working of the stone is, however, the objection to its use here, being too expensive. On trying to cut one of the stones after use at the furnaces it was found to be very hard, but it would not stand the weather.—Yours truly,

WILLIAM BURNETT.

Tube Railways and Houses in their Vicinity.

To the Editor of The Builders' Journal.

London, W.C.

Sir,—Two of the most important points in regard to tube railways which must necessarily be carefully considered in the near future are—to what extent are these railways to be allowed to vibrate, and to what extent are the owners of such railways to be held responsible for the results of vibration?

A large number of buildings along the route of these railways has been damaged by subsidence. In a number of cases the walls have been broken throughout their entire height, while in other cases only plaster cracks in the walls and ceilings appear as yet; but what may we look for when the trains have been running in the "ordinary way" for, say, six months! Several owners and leaseholders have informed me that before taking any action in the matter of compensation they intend "to wait till the trains run," so as to determine whether the vibration increases the damage already sustained.

The question occurs to me, Can the railway companies be held responsible for increased damage caused by vibration, damage which would not have been incurred had the buildings been put in a proper state of repair before the running of trains?—that is, where no compensation has been received or where compensation has been received, but the time for reinstatement of damage has been insufficient to complete the work.

All buildings along the line of streets and highways vibrate to a certain extent, but the vibration, though sufficient to be felt and measured, will not necessarily injure the buildings whilst the foundations remain intact and the walls are homogeneous; but should the walls become cracked, then the vibration will soon show its evil effect.

The vibration caused by running trains will undoubtedly help the subsoil to take its bearing, and this subsidence will take place gradually, and may possibly in some localities extend over a period of, say, two years, according to the nature of the subsoil, &c.; so that if the companies are liable only for structural damage caused by the construction of their works, and if they are not to be held liable for any damage which may occur after repairing or compensating, then I can see that the leaseholder who is bound to "uphold and maintain" will be placed in a very awkward position, for at the time of compensating "future damage" is purely speculative and is not likely to receive much consideration or to be assessed at a full value either by the railway companies, juries or arbitrators, and the allowance made in such cases will in all probability be a minimum amount.

Is it possible then to make compensation specific, so as only to apply to such damage as could be proved at the time of acceptance and in no way to cover future damage? A fairly accurate check could be made, and a record kept of all damage sustained, by means of photographs, &c.

In the event of a tube railway passing near or under a leasehold site upon which the lessee is about to erect a new building considerably heavier than the existing structure (which we will assume has been damaged through subsidence), the freeholder having for a consideration granted an easement to the railway company subsequent to the granting of the lease, who would be responsible for the increased cost of foundations necessary on account of the resistance of the soil having been lessened? In "taking the land" the railway company also takes (for a term) part of the ground resistance, which may necessitate an increased area of the foundations to perhaps double; and as the lessee when entering upon his lease of the site is entitled to expect that he may erect any building within the meaning of the Building Act upon such site, it would seem to me unjust that he should be called upon to expend double the amount upon the foundations of the building that would have been required had no tube passed under or near his site.—Yours truly,

CHARLES R. MITCHELL.

Manchester Society of Architects.—About 450 members and guests assembled at the City Art Gallery, on Friday, February 27th, and were received by the President and Council. Selections of music were played during the evening by the Manchester Military String-band, and there was an interesting and representative exhibition of work by the members. Among the guests who accepted were Mr. Alfred Hopkinson, Principal of Owens College, Mr. David Morgan, President of the Cardiff, South Wales and Monmouthshire Society of Architects, Mr. A. H. Crawford, President of Edinburgh Architectural Association, Mr. S. Trevail, President of the Society of Architects, Mr. John Belcher, Vice-President of the Royal Institute of British Architects, Mr. John Slater, Vice-President of the Royal Institute of British Architects, Mr. J. Flew, President of the Bradford Society of Architects and Surveyors, and Mr. Arthur Clyne, President, Aberdeen Society of Architects.

Keystones.

A new Cathedral at Bombay is proposed to be erected.

The Restoration of All Hallows Church, near Rochester, which dates from Norman times, is now completed.

A Church at Summerstown, Tooting, is to be erected from designs by Mr. Godfrey Pinkerton. It will seat 800 persons and cost over £9,000.

Restoration of Welbeck Abbey.—All the floors have been or are being sound-deadened by means of fibrous pugging slabs supplied by Messrs. Frederick Jones & Co., of Kentish Town, N.W.

His Majesty the King has been graciously pleased to accept copies of the current issue of THE ARCHITECTURAL REVIEW containing Mr. MacColl's article on the Wellington Monument.

The Church at Westfield, near East Dereham, has been reopened after restoration and repair from plans by Mr. A. J. Lacey, F.R.I.B.A., of Upper King Street, Norwich. Messrs. J. Springall & Son, of Swanton Morley, were the contractors.

St. Peter's Vicarage, Southwark.—This work is being executed by Messrs. Vigor & Co., 10, Grosvenor Road, S.W., from the design of Mr. A. H. Ryan-Tenison, A.R.I.B.A., 12, Little College Street, Westminster, S.W., at a total outlay of £2,497.

Liverpool Cathedral.—The amount in hand and promised towards the cathedral scheme now exceeds £170,000. The designs being prepared by the six selected architects are to be sent in to the Committee by the end of April.

Technical Education in America.—The Principal of the Northampton Institute, London (Dr. R. Mullineux Walmsley), is being sent on a three months' tour to the United States and Canada for the purpose of investigating the present position of technical education in those countries and its bearings upon industrial production in the subjects covered by the technological work of the Institute, but more especially in the engineering industries.

The Aberdeen Society of Architects held its annual general meeting last week. Mr. Arthur Clyne, the retiring president, delivered a short address. The following office-bearers and council for the ensuing year were elected:—President, Mr. Arthur Clyne; vice-president, Mr. R. G. Wilson; hon. treasurer, Mr. John Rust; hon. secretaries, Mr. Rust and Mr. A. H. L. Mackinnon; members of council, Messrs. William Kelly, H. Maclennan, J. R. Macmillan, W. Ruxton and George Watt.

New Members R.I.B.A.—The following gentlemen have been elected Members of the Royal Institute of British Architects:—As Fellows: W. Ainslie, Sir Rowand Anderson, LL.D., F.R.S.E. (Edinburgh), T. E. Cooper, H. Davis (Scarborough), J. M. Henry (Edinburgh), W. Stirrup (Blackburn), W. A. Waddington (Manchester), J. H. T. Woodd, M.A. Cantab., A. W. Yeomans (Chard, Somerset). As Associates: R. Bennett (Buxton), W. E. Brooks, F. B. Chester, W. St. Leger Crowley (Cardiff), W. Greenwood (Blackburn), J. H. Higson (Blackburn), J. Holt (Wilmslow, Cheshire), C. H. Hopson (Canada), H. J. B. Hoskins (Birmingham), J. I. P. Jones (Cardiff), J. M. Lethbridge, T. F. Maclennan (Edinburgh), T. McLaren (Montreal), C. E. Monro (Glasgow), G. S. Nicol (Birmingham), C. E. L. Parkinson, F. G. Richardson, N. T. Salmon (Reading), S. Towse, W. H. Watkins (Bristol), H. White, F. C. Wrigley. As Hon. Corresponding Member: Constant Moyaux, Member of the Institute of France, President of the Société Centrale des Architectes Français, Paris.

The Metropolitan Public Gardens Association has just issued its twentieth annual report, for 1902, price 6d.

Competitive Designs for Municipal Buildings at St. Ives are to be invited, premiums of £70 and £30 being offered. The buildings are to cost about £6,000.

A Sepulchral Monument.—M. José de Charmoy, the author of the monument to Baudelaire, has been commissioned to execute the monument which is to be placed on the tomb of Sainte-Beuve.

Radley College Extension.—The house and wing designed by Mr. A. H. Ryan-Tenison, A.R.I.B.A., 12, Little College Street, Westminster, is to be carried out by Mr. S. Hutchins, 1A, Southmoor Road, Oxford, at a cost of £8,007. The work is commenced.

Business Premises at Cambridge.—The business premises of Miss Laurie and Mrs. Connal at Cambridge, lately destroyed by fire, are to be rebuilt immediately, and Mr. R. Frank Atkinson, of London, has been appointed the architect.

The Edinburgh Architectural Association paid its first visit of the session last Saturday week to the Usher Institute of Public Health, Warrender Park Road, by kind permission of the University Court and Prof. Hunter Stewart. The members were conducted over the building by Dr. Buchanan Young, in the absence of Prof. Hunter Stewart, and by Messrs. Leadbetter & Fairley, the architects.

Discoveries at Peterborough Cathedral.—During some excavations for underpinning the south wall of the sanctuary of Peterborough Cathedral, last week, three stone coffins, one very large and two small ones, and the stem of a Saxon cross richly ornamented with moulding of a well-known Celtic pattern, were discovered. The spot is the north-eastern extremity of the Saxon church which was destroyed by fire by the Danes, and probably formed part of a monastic burial-ground. The cross is to be preserved in the cathedral.

The Royal Institute of the Architects of Ireland held a meeting of members on February 26th. The president, Mr. G. C. Ashlin, R.H.A., occupied the chair. The president asked the members present to enter into a discussion as to how far the existing conditions of contract in their individual experience met the general needs of the profession. The proposed revision of the conditions of contract generally in use in Ireland is a matter which the council is very carefully considering. Mr. J. Rawson Carroll stated his views at some length, and was followed by Mr. Gilliland, Mr. Murray, Mr. Shaw, Mr. Orpen, Mr. Sheridan and others. Mr. Allberry moved a resolution in reference to the proposed initiative of a qualifying examination as a condition precedent to election to membership of the Institute.

Glasgow Technical College Craftsmen's Society.—At the usual meeting of this Society held on Friday night (Mr. C. Ernest Monro, architect, in the chair), Mr. James Lockhead, A.R.I.B.A., gave a lecture on "Belgium—Commerce and Architecture." The lecture which was illustrated by 100 lantern slides was descriptive of a tour through Antwerp Brussels, Courtray, Tournay, Louvain, Bruges and Ypres. The lecturer traced the expression of the rise of independence and growth of commercial prosperity in the architectural character of the public buildings. After showing general views of the towns he took up Town Halls, Cloth Halls, Belfries, Guild Houses, &c., in groups. He then showed a large number of typical gable treatments most of the illustrations being from his own sketches. On Saturday afternoon the members were shown over the new Central Stores (Messrs. Ernest Runtz & Co., architects) by Mr. Currie, clerk of works.

Tientsin Club Competition.—In a recen open competition for a proposed New Club Building for Tientsin, North China, ten firms of architects from China and Japan submitted plans. The Building Committee awarded the first premium of £120 to Messrs. Algar & Beesley, architects, of Shanghai, whose plans were considered best in merit and suitability. The estimated cost of the new building is about £20,500. The new building has been designed by Mr. Beesley in the Classic style, and has an imposing appearance. Externally, it is proposed to use grey Pekin granite with dressings of green Ningpo stone, the roofs to be covered with red Kiautchou tiles.

The R.I.B.A. and Registration.—At the last meeting of the Royal Institute of British Architects the president (Mr. Aston Webb, A.R.A.), referring to the circular recently issued by the Society of Architects headed "A Government Diploma for Architects," announced that the Council were still opposed to any such scheme of registration as that set forth in a previous Bill dealing with the same subject, but when the details of the proposed Bill were before them and had been duly considered the Council would be prepared to give their definite views as to the course to be taken.

A Masonic Temple at Hamilton, N.B., is being erected from designs by Mr. Alexander Cullen.

St. Bartholomew-the-Great, Smithfield.—The three remaining bays of the cloisters of the old Priory have now been purchased and a faculty obtained for connecting them with the church by means of the original monks' doorway, which, though at present bricked up, can still be traced in the wall of the south ambulatory.

Sir Rowand Anderson, LL.D., delivered a lecture recently before the St. Peter's Men's Union, Kirkcaldy, on "Some Phases and Types of Architecture." Discussing modern architecture and its future, he ventured the opinion that it was impossible we could have a new method, as all the possible methods of construction were known to us. Perhaps the most interesting point in the lecture was that in which he hit off the characteristics of some of Edinburgh's best-known pieces of architecture—the castle-like nature of the Calton Jail, which, as architecture, was a veritable sham. A castle, he remarked, was a place to keep people out, while a jail was a place to keep people in—showing the incongruity of the building as architecture. The modern "castle" was happily hit off as a "a costly delusion," and comparisons made between the old "keeps" and the modern castle-shaped residences.

Complete List of Contracts Open.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	BUILDING:		
March 12	Ashford, Middlesex—Schoolrooms, &c.	West London School District Managers.	F. W. Roper, 9 Adam Street, Adelphi, W.C.
" 12	Portsmouth—Portland Cement	—	J. Paton, Borough Surveyor, Portsmouth.
" 12	Newport—Pumping Station Buildings	Alexandra Docks and Rly. Co.	Sir J. Wolfe Barry & Partners, 21 Delahay Street, Westminster.
" 12	Wembley—Ventilating Council-Chamber, &c.	Urban District Council	W. Bagshaw, Clerk, Public Offices, Wembley.
" 12	Budleigh Salterton, Devon—Church, &c.	—	Batstone Brothers, 110 Cannon Street, London.
" 12	Belfast—Fire Brigade Station	Police Committee	W. J. Hunter, Scottish Provident Buildings, Belfast.
" 12	Monmouth—Alterations, &c., to Buildings	—	T. A. Williams, Clerk, Monmouth.
" 12	Hanley, Staffs—Pavilion, &c.	North Staffs Joint Smallpox Hospital Board.	E. Jones, 10 Albion Street, Hanley.
" 12	Hunwick—School, &c.	—	G. Wright, Hunwick.
" 12	London, W.—Chimney Shaft, Alterations, &c., to Boiler and Engine Houses.	Kensington Guardians	E. Flint, 80 Coleman Street, E C.
" 12	Maesteg, Wales—Re-building Inn, Stables, &c.	E. E. Bevan	J. C. Rees, Architect, Neath.
" 12	Plymouth—Portland Cement	—	J. Paton, Borough Surveyor, Plymouth.
" 12	Dorking—Organ-Chamber and Vestry	Union Guardians	G. Scales, Clerk, 35 High Street, Dorking.
" 13	Barnsley—Enlargement of Post Office	Commnrs. of H.M. Works, &c.	Secretary, H.M. Office of Works, &c., Storey's Gate, S.W.
" 13	Kirkby Moorside, Yorks—Widening Stone Bridge	—	W. G. Bryning, County Surveyor, Northallerton.
" 13	Manchester—Store and Shed	Workhouse Committee	A. J. Murgatroyd, 23 Strutt Street, Manchester.
" 13	New Tredegar, Mon.—15 Houses	Alexandra Building Club	G. Kenshole, Architect, Station Road, Bargoed.
" 13	Prudhoe, Northumberland—10 Cottages	Northumberland Miners' Homes Association.	T. Tulip, Whinney Hill, Choppington.
" 13	Winsley, near Bath—Sanatorium	—	T. B. Silcock and S. S. Reay, 47 Milsom Street, Bath.
" 13	Luddenden Foot, near Halifax—House	—	T. H. Tyson, Architect, Fountain Street, Halifax.
" 14	Alnwick—2 Semi-detached Villas	W. Graham	M. T. Wilson, Architect, Alnwick.
" 14	Bridlington—Furnace and Shed	Corporation	Borough Surveyor, Town Hall, Bridlington.
" 14	Coatbridge, Scotland—Library	Town Council	W. Lyle, 16 St. John Street, Coatbridge.
" 14	Cray, Brecon—Vicarage	—	Rev. O. Davies, Forest Cottage, Cray, Brecon.
" 14	Harrow-on-the-Hill—Cottage	Urban District Council	J. P. Bennetts, Surveyor to Council, Harrow-on-the-Hill.
" 14	Llandudno—Refreshment Rooms, &c.	G. B. Morgan	H. Milling, Architect, Clarence Hotel, Llandudno.
" 14	Purton, Wilts—Cattle Sheds Cart House, &c.	N. S. Maskelyne	R. S Beswick, 35 Regent Street, Swindon.
" 14	East Ham—Bricks, Lime, Cement, &c.	Urban District Council	C. E. Wilson, Clerk, Town Hall, East Ham.
" 14	Salford—Bricks, Cement, &c	Electricity Department	Borough Electrical Engineer, Frederick Road, Pendleton.
" 14	Harrogate—Portland Cement	Corporation	E. W. Dixon, 14 Albert Street, Harrogate
" 14	Reigate—Retaining Walls, &c.	Corporation	Borough Surveyor, Municipal Buildings, Reigate.
" 14	London, N.—Alterations to Infirmary	St. Leonard's Guardians	F. J. Smith, Parliament Mansions, Victoria Street, S.W.
" 14	Halifax—Cement, Ashlar, &c.	Corporation	W. M. Rogerson, Borough Elec. Engineer, Foundry St., Halifax.
" 14	Eastbourne—Bricks, &c.	Town Council	Borough Engineer, Town Hall, Eastbourne.
" 16	Manchester—Baths	Corporation	City Architect, Town Hall, Manchester.
" 16	East Ham—Technical School	Urban District Council	Cheers & Smith, Architects, Twickenham.
" 16	East Ham—Refuse-Destructor	Urban District Council	A. H. Campbell, Engineer, Town Hall, East Ham.
" 16	Glasgow—Buildings	Glasgow & South-Western Rly. Co.	J. Sturrock, Junr., 65 King Street, Kilmarnock.
" 16	Glasgow—Alterations to Depôts	Tramways Committee	J. Young, 88 Renfield Street, Glasgow.
" 16	Levenshulme, Lancs—Greenhouse, &c.	Urban District Council	J. Jepson, Surveyor, Guardian Chambers, Tiviot Dale, Stockport.
" 16	Lumb—Additions to School	—	A Brocklehurst, Architect, Waterfoot
" 16	Lyndhurst, Hants—Additions, &c., to Police Station	County Council	W. J. Taylor, County Surveyor, The Castle, Winchester.
" 16	Nantwich—Schools	—	R. Matthews, Architect, Nantwich.
" 16	Pontlottyn, Wales—Boundary and Retaining Walls	Gelligaer Parish Council	J. Jones, Clerk, Hengoed, via Cardiff.
" 16	Shipdham, near Thetford—Schoolroom, &c.	—	Rev. A. J. Fitton, Everleigh, Shipdham.
" 16	Willesborough, near Ashford, Kent—Scullery	East Ashford Union Guardians	T. H. Wilde, Albemarle Road, Willesborough.
" 16	Bolton Hall, near Leyburn—Re-building	—	C. H. Fowler, Architect, The College, Durham.
" 17	Warning Camp, near Arundel—Classroom at School	School Board	A. Shelley, Clerk, Town Offices, Littlehampton.
" 17	Radcliffe, Lancs—Basement, &c.	Urban District Council	W. L. Rothwell, Engineer, Council Offices, Radcliffe.
" 17	Coalville, Leics—Pumping Station, &c.	Urban District Council	J. B. Everard, 6 Millstone Lane, Leicester.
" 17	London, W.—Arches in Goods Yard, &c.	Great Western Railway Co.	Engineer, Paddington Station, London.
" 18	Isleworth—Demolition	Brentford Union Guardians	W. H. Ward, Architect, Paradise Street, Birmingham.
" 18	Ebbw Vale, Mon.—11 Houses, &c.	T. Edwards	B. J. Francis, Architect, Abergavenny.
" 18	Huntingdon—Post Office	Commnrs. of H.M. Works, &c.	Secretary, H.M. Office of Works, &c., Storey's Gate, S.W
" 19	Acton Manor, Birmingham—Bricks, &c.	Urban District Council	G. H. Jack, Surveyor, Council House, Aston Manor.
" 19	Halifax—Residence	—	R. Berry, Architect, Commercial Street, Halifax.
" 19	Wisborough Green—Alterations to Inn	King & Sons, Ltd.	C. H. Burstow, 6 West Street, Horsham.
" 19	Norwich—Workmen's Dwellings	Corporation	A. E. Collins, City Engineer, Norwich.
" 20	Whitby—Alterations in Workhouse	Guardians	W. S. Gray, 38 Flowergate, Whitby.
" 21	Lampeter—Assembly Rooms	—	Ll. Banks-Price, 28 High Street, Lampeter.
" 21	Manchester—Lavatory	Sanitary Committee	City Surveyor, Town Hall, Manchester.
" 21	West Auckland—Church and School	—	G. Race, Architect, Westgate, Weardale.
" 22	Cork—House	W. Lee	96 Patrick Street, Cork.
" 22	Moylgrove, Wales—Farm Buildings	—	J. M. Philipps, Treriffith.
" 23	Wrexham—Shed	Town Council	Borough Snrveyor, Wrexham.
" 24	Ilford, Essex—Crematorium	Burial Board of City of London	Engineer, Guildhall.
" 25	Cobham, near Gravesend, Kent—Infectious Diseases Hospital	Strood Rural District Council	E. G. Page, 4 and 5 Warwick Court, Gray's Inn, W.C.
" 25	Hove, Sussex—Wall, &c.	Town Council	H. H. Scott, Borough Surveyor, Hove, Sussex.
" 25	Pengam, Wales—25 Houses	Fleur-de-Lys Bldg. Club (No. 3)	G. Kenshole, Architect, Station Road, Bargoed.
" 25	Strood, Kent—Infectious Diseases Hospital	Rural District Council	E. G. Page, 4 and 5 Warwick Court, Gray's Inn, W.C.
	ENGINEERING:		
March 12	London, E.C.—Weighbridges, &c.	Bengal-Nagpur Rly. Co., Ltd.	Secretary, 132 Gresham House, Old Broad Street, E.C.
" 14	Aberdeen—Electrical Tramcars	Tramways Committee	J. A. Bell, Engineer, Electricity Works, Milburn Street, Aberdeen.
" 14	Lancaster—Extension of Quay	—	D. & C. Stevenson, 84 George Street, Edinburgh.
" 14	Walsall—Bacteria Beds, &c.	Corporation	Borough Surveyor, Bridge Street, Walsall.
" 14	Salford—Motors, &c.	Electricity Department	Borough Electrical Engineer, Frederick Road, Pendleton.
" 16	Edinburgh—Telephone Installations	Lord Provost, Magistrates and Council.	Resident Engineer, Electricity Supply Station, Dewar Place, Edinburgh.

Complete List of Contracts Open —*continued.*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	ENGINEERING:—*cont.*		
March 16	Derby—Pipelaying	Corporation	J. Ward, Borough Surveyor, Derby.
„ 16	Stroud—Disinfecting Apparatus, &c.	Joint Hospital Board	G. P. Milnes, Architect, Stroud.
„ 16	London, N.—Electrical Stores, &c.	Hornsey U.D.C.	E. J. Lovegrove, Council's Engineer, Southwood Lane, Highgate, N
„ 16	Bilston—Wiring, &c.	Urban District Council	J. P. Wakeford, Engineer, Town Hall, Bilston.
„ 16	Brigg, Lincs—Sluice Doors	Drainage, &c., Commissioners	A. Atkinson, Engineer, Brigg.
„ 16	Bristol—Wharf	Docks Committee	W. W. Squire, Underfall Yard, Cumberland Road, Bristol.
„ 16	Exeter—Steam Roller, &c.	City Council	T. Moulding, 7 Southernhay West, Exeter.
„ 16	Gorton Lancs—Bridge	Urban Council	C. J. Lomax, 37 Cross Street, Manchester.
„ 17	Salford—Engines	—	Superintendent, Cleansing Department, Wilburn Street, Salford.
„ 17	London, S.W.—Electric Tramcars	London County Council	County Hall, Spring Gardens, S.W.
„ 18	Killarney—Water Pipe	—	J. O'Leary, Clerk, District Lunatic Asylum, Killarney.
„ 20	Darlington—Motor Cars, &c.	Corporation	H. G. Steavenson, Town Clerk, Darlington.
„ 20	Barking, Essex—Light Railway Materials	Urban District Council	W. C. C. Hawtayne, 9 Queen Street Place, E.C.
„ 21	Wrexham—Electrical Stores	Town Council	Borough Electrical Engineer, Wrexham.
„ 23	Devonport, Engine, &c.	Gas Committee	S. E. Stevenson, Engineer, Gasworks, Devonport.
„ 23	Dublin—Dredger	Port and Docks Board	J. P. Griffith, Engineer, East Wall, Dublin.
„ 25	London, S.W.—Launch	Admiralty	Secretary, Admiralty, Ship Branch, S.W.
„ 27	Sunderland—Electric Cables, &c.	Corporation	J. F. C. Snell, Borough Electrical Engineer, Town Hall, Sunderland.
„ 27	Sunderland—Fuel Economiser	Corporation	J. F. C Snell, Borough Electrical Engineer, Town Hall, Sunderland.
„ 28	Wednesbury—Motor-Generators, &c.	Mayor, Aldermen and Burgesses	F. J. Warden-Stevens, 34 Victoria Street, Westminster.
„ 28	Welwyn, Herts—Sinking Well	Rural District Council	R. E. Middleton, 17 Victoria Street, S.W.
„ 31	Wyke Regis, Dorset—Sewerage Works	Weymouth R.D.C.	Lemon & Blizard, Engineers, Castle Lane, Southampton.
May 2	Central Australia—Railway	South Australian Government	Agent-General for South Australia, London.
July 1	Rangoon—Electric Supply Undertaking	Municipal Committee	Ogilvy, Gillanders & Co., 67 Cornhill, E.C.
	FURNITURE:		
March 18	Canterbury—School Furniture	School Board	H. Fielding, 15 Bexgate Street, Canterbury.
„ 18	Croydon—Furniture for Hospital	Lunacy Visiting Committee	A. C. Gower, Clerk, Town Hall, Croydon
	IRON AND STEEL:		
March 13	Cardiff—Ironmongery	Union Guardians	A. J. Harris, Clerk, Queen's Chambers, Cardiff.
„ 14	Devonport—Tidal Valves, &c.	—	J. F. Burns, 29 Ker Street, Devonport.
„ 14	East Ham—Stores	Urban District Council	C. E. Wilson, Clerk, Town Hall, East Ham.
„ 14	Salford—Stores	Electricity Department	Borough Electrical Engineer, Frederick Road, Pendleton.
„ 14	Eastbourne—Cast and Wrought-iron Goods, &c.	Town Council	Borough Engineer, Town Hall, Eastbourne.
„ 14	Bury, Lancs—Stores	Gas Committee	H. Simmonds, Engineer, Gasworks, Bury.
„ 14	Halifax—Materials and Stores	Corporation	J. Lord, Borough Engineer, Town Hall, Halifax.
„ 17	Belfast—Stores	Works Committee	Superintendent of Works Office, Townhall Street, Belfast.
„ 18	Reading—Stores	Corporation	J. Bowen, Borough Engineer, Town Hall, Reading.
„ 19	Aston Manor, Bimingham—Stores	Urban District Council	G. H. Jack, Engineer, Council House, Aston Manor.
„ 20	Brazil—Iron and Steel	Central Railway	Commercial Intelligence Branch of Board of Trade, 50 Parliament Street, S.W.
„ 21	Wrexham—Tools and Ironmongery	Town Council	Borough Surveyor, Wrexham.
„ 23	Bolton, Lancs—Stores	Waterworks Committee	Mr. Swindlehurst, Waterworks Engineer, Town Hall, Bolton.
June 15	Bangkok, Siam—Permanent-way Materials	Royal Siamese State Railways	Director-General Gehots, Bangkok.
„ 15	Bangkok, Siam—Railway Stores	Royal Siamese State Railways	Siamese Legation, London.
	PAINTING AND PLUMBING:		
March 12	Chelmsford—Painting Water Tower	Town Council	Borough Surveyor, 16 London Road, Chelmsford.
„ 13	Brighton—Painting	Town Council	F. J. C. May, Borough Engineer, Town Hall, Brighton.
„ 14	Penzance—Painting and Decorating Church	—	J. H. Bennetts, 72 Market Jew Street, Penzance.
„ 14	East Ham—Oils, Colours, Brushes, &c.	Urban District Council	C. E. Wilson, Clerk, Town Hall, East Ham.
„ 14	Halifax—Oils, Paints, &c.	Corporation	J. Lord, Borough Engineer, Town Hall, Halifax.
„ 14	Bury, Lancs—Oils, White and Red Lead, &c.	Gas Committee	H. Simmonds, Engineer, Gasworks, Bury.
„ 14	Eastbourne—Oils and Colours, &c.	Corporation	Borough Engineer, Town Hall, Eastbourne.
„ 16	Warrington—Oils, Paints, Brushes, &c.	—	H. Ellis, Clerk, County Asylum, Winwick, Warrington.
„ 17	Leeds—Painting, &c., Police Stations	—	City Engineer, Leeds.
„ 17	Belfast—Paints, Oils, &c.	Works Committee	Superintendent of Works' Office, Town Hall Street, Belfast.
„ 18	Reading—Oils, Paint, &c.	Corporation	J. Bowen, Borough Surveyor, Town Hall, Reading.
„ 21	Wrexham—Oils, Paints, &c.	Town Council	Borough Surveyor Wrexham.
„ 23	Bolton, Lancs—Paint, Oil, &c.	Waterworks Committee	Mr. Swindlehurst, Waterworks Engineer, Town Hall, Bolton.
	ROADS AND CARTAGE:		
March 12	Hinckley, Leics—Materials	Urban District Council	F. C. Cook, Surveyor, Council Offices, Hinckley.
„ 12	London, N.—Footpath, &c.	East Barnet Valley U.D.C.	H. York, Surveyor, Council's Offices, Station Road, New Barnet.
„ 13	Garsdon, near Newcastle-on-Tyne—Materials	Urban District Council	J. R. MacMillen, Council Offices, Shiremoor.
13	Staines—Materials	Urban District Council	E. J. Barrett, Surveyor, Town Hall, Staines.
„ 13	Pentre, Glamorgan—Improvement Works	Rhondda U.D.C.	W. J. Jones, Surveyor, Council Offices, Pentre Glam.
„ 13	Chelmsford—Materials, &c.	Rural District Council	H. G. Warne, Surveyor, Avenue Chmbrs., Market Rd, Chelmsford
„ 14	Mitcham—Cartage, &c.	Croydon R.D.C.	E. J. Gowen, Clerk, District Council Offices, Town Hall, Croydon.
„ 14	Burnley—Materials	Rural District Council	S. Edmondson, 18 Nicholas Street, Burnley.
„ 14	Halifax—Materials, &c.	Corporation	J. Lord, Borough Engineer, Town Hall, Halifax.
„ 14	Coventry—Materials	Corporation	J. E. Swindlehurst, City Surveyor, St. Mary's Hall, Coventry.
„ 14	Droitwich—Granite	Corporation	H. Hulse, Borough Surveyor, Droitwich.
„ 14	Haslingden, Lancs—Materials, &c	Town Council	J. S. Green, Borough Surveyor, Haslingden.
„ 14	Padiham, Lancs—Materials	Urban District Council	J. Gregson, Surveyor, Council Offices, Padiham.
„ 14	Stafford—Slag	Rural District Council	W. Morgan, 4 Martin Street, Stafford.
„ 14	East Ham—Materials	Urban District Council	C. E. Wilson, Clerk, Town Hall, East Ham
„ 16	East Ham—Four Watering Vans	Urban District Council	A. H. Campbell, Surveyor, Town Hall, East Ham.
„ 16	Lichfield—Carting, &c.	Rural District Council	C. O. Rawstron, District Surveyor, Lichfield.
„ 16	Nuneaton—Laying-out Cemetery—Additions	Burial Board	C. Blakeway, Clerk, Nuneaton.
„ 16	Aber-Bargoed, Wales Roads, &c.	—	G. Kenshole, Architect, Station Road, Bargoed.
„ 16	Erith, Kent—Street Works	Urban District Council	Surveyor, Bexley Road, Erith.
„ 16	Lichfield, Staffs—Granite	Rural District Council	J. C. O. Rawstron, District Surveyor, Lichfield.
„ 16	Maidstone—Road Materials &c.	Urban District Council	M. T. F. Bunting, Borough Surveyor, Fair Meadow, Maidstone.
„ 16	Tutbury, Burton-on-Trent—Materials	Rural District Council	H. S. Tebbitt, 320 Shobnall Street, Burton-on-Trent.
„ 16	Eccles, Lancs—Materials	Corporation	T. S. Picton, Borough Surveyor, Town Hall, Eccles, Lancs.
„ 16	Abergavenny—Materials, &c.	Rural District Council	J. Gill, 4 Brecon Road, Abergavenny.
„ 17	Trowbridge—Horse Hire, &c	Urban District Council	H. G. Nicholson-Lailey, Town Surveyor, Town Hall, Trowbridge
„ 17	Caerphilly, Wales—Limestone	Urban District Council	A. O. Harper, Surveyor, Council Offices, Caerphilly.
„ 17	Calverley near Leeds—Road Works	Clarke-Thornhill Estate	G. & G. H. Crowther, 38 New Street, Huddersfield.
„ 17	Hampton, Middlesex—Materials	Urban District Council	S. H. Chambers, Surveyor, Council Offices, Hampton.
„ 17	London, S.W.—Making-up &c.	Wandsworth Borough Council	Clerk, Council House, East Hill, Wandsworth.
„ 17	Rhymney, Wales—Pavement	Urban District Council	W. Ll. Marks, 61 High Street, Rhymney.
„ 17	Rhymney, Wales—Road	Urban District Council	W. Ll. Marks, 61 High Street, Rhymney.
„ 17	St. Helen's, Lancs—Materials	Corporation	G. J. C. Broom, Borough Engineer, St. Helen's.
„ 17	Thame, Oxon—Granite	Long Crendon R.D.C.	A. J. Dickinson, Surveyor, Field House, Thame.
„ 17	Worksop—Slag	Blyth and Cuckney R.D.C.	F. Hopkinson, 40 Bridge Street, Worksop.
„ 17	Woolston, Hants—Street Works	Itchen U.D.C.	T. A. Collingwood, Surveyor, Council Offices, Portsmouth Road, Woolston.
„ 17	Woolston, Hants—Private Street Works	Itchen U.D.C.	T. A. Collingwood, Surveyor, Council Offices, Portsmouth Road, Woolston.
„ 17	Wortley, Sheffield—Materials	Rural District Council	F. Crawshaw, Surveyor, Loxley.
„ 17	Belfast—Materials	Works Committee	Superintendent of Works' Office, Townhall Street, Belfast.
„ 18	Reading—Materials	Corporation	J. Bowen, Borough Surveyor, Town Hall, Reading.
„ 18	North Witchford, Isle of Ely—Granite, &c.	Rural District Council	A. W. Broker, Surveyor, Wimblington, near March.
„ 19	Aston Manor, Birmingham—Materials	Urban District Council	G. H. Jack, Surveyor, Council House, Aston Monor.
„ 20	Eastbourne—Road Materials	Rural District Council	C. M. Carter, District Surveyor, Down View, Polegate, Sussex.
„ 20	Hull—Stone	Corporation	A. E. White, City Engineer, Town Hall, Hull.
„ 20	Rothwell, near Leeds—Materials	Urban District Council	J. T. Pears, Surveyor, Council Offices, Rothwell.
„ 21	Wrexham—Materials	Town Council	Borough Surveyor, Wrexham.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
		ROADS AND CARTAGE—*cont.*		
March	21	Burnley—Materials, &c.	Highways & Sewage Committee	G. H. Pickles, Borough Surveyor, Town Hall, Burnley.
„	21	Durham—Granite Setts	——	J. S. Pegge, City Surveyor, Durham.
„	21	Hoylake—Materials	Urban District Council	L. G. Dashper, Surveyor, Council Offices, Hoylake.
„	21	Sibsey, Lincs—Granite or Slag	Rural District Council	J. M. Simpson, Clerk, Boston.
„	23	Tendring, Essex—Flints	Rural District Council	J. Bell, Highway Surveyor, Weeley, Colchester.
„	24	Brownhills, Staffs—Materials	Urban District Council	W. B. Chancellor, Town Surveyor, Public Buildings, Brownhills.
„	25	Strood, Kent—Road Maintenance	Rural District Council	J. E. Povey, Clerk, Workhouse, Strood.
„	31	Dartford—Kerbing, &c.	Urban District Council	W. Harston, 8 Hythe Street, Dartford.
April	4	Chingford, Essex—Making-up, &c.	Urban District Council	W. Stair, 14 The Parade, Chingford.
		SANITARY:		
March	13	Rotherham—Sewerage Works	Rural District Council	J. Platts, Engineer, High Street, Rotherham.
„	13	Staines—Aluminoferric	Urban District Council	E. J. Barrett, Engineer, Town Hall, Staines.
„	14	East Ham—Stoneware Pipes, &c.	Urban District Council	C. E. Wilson, Clerk, Town Hall, East Ham.
„	14	Eastbourne—Pipes, Junctions, &c.	Town Council	D. J. Bowe, Acting Borough Engineer, Town Hall, Eastbourne.
„	14	Burnley—Earthenware Pipes, Disinfectants, &c.	Rural District Council	S. Edmondson, 18 Nicholas Street, Burnley.
„	14	Halifax—Pipes, Gulleys, &c.	Corporation	J. Lord, Borough Engineer, Town Hall, Halifax.
„	14	Walsall—Bacteria Beds, &c.	Corporation	Borough Surveyor, Bridge Street, Walsall.
„	16	Eccles, Lancs—Disinfectants, &c.	Corporation	Chief Sanitary Inspector, Town Hall, Eccles.
„	16	Cambridge—Scavenging	Urban District Council	Borough Surveyor, Guildhall, Cambridge.
„	17	Fulwood, Lancs—Sewers, &c	Urban District Council	E. H. Naylor, Surveyor, Council Office, Fulwood, Preston.
„	17	Caerphilly, Wales—Sewers, &c.	Urban District Council	A. O. Harpur, Engineer, Council Offices Caerphilly.
„	17	East Donyland, &c., Essex—Cleansing Ashpits, &c.	Lexden and Winstree R.D.C.	C. H. Tompson, Clerk, Victoria Chambers Colchester.
„	17	Belfast—Sewer Pipes, &c.	Works Committee	Superintendent of Works' Office, Townhall Street, Belfast.
„	18	Pontlottyn, Wales—Scavenging	Llantrisant R.D.C.	G. S. Morgan, Surveyor, School Street, Pontyclun.
„	18	Reading—Drain Pipes	Corporation	J. Bowen, Borough Surveyor, Town Hall, Reading.
„	21	Hoylake—Disinfectants, Drain Pipes, &c.	Urban District Council	L. G. Dashper, Surveyor, Council Offices, Hoylake.
„	21	Billinghurst, Sussex—Drainage Works	Horsham R.D.C.	W. Vaux-Graham, 5 Queen Anne's Gate, Westminster, S.W.
„	21	Wrexham—Pipes, &c.	Town Council	Borough Surveyor, Wrexham.
„	26	Camelford, Cornwall—Sewerage Works	Rural District Council	S. W. Jenkin & Son, Engineers, Liskeard.
„	31	Wyke Regis, Dorset—Sewerage Works	Weymouth R.D.C.	Lemon & Blizard, Engineers, Castle Lane, Southampton.
		TIMBER:		
March	14	Salford—Timber	Electricity Department	Borough Electrical Engineer, Frederick Road, Pendleton.
„	17	Belfast—Timber	Works Committee	Superintendent of Works' Office, Townhall Street, Belfast.
„	23	Bolton—Lancs	Waterworks Committee	Mr. Swindlehurst, Waterworks Engineer, Town Hall, Bolton.

List of Competitions Open.

DATE OF DELIVERY.		DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
March	15	Hull—Soldiers' Memorial	——	——	E. Laverack, Town Clerk, Town Hall, Hull.
„	18	Bolton-upon-Dearne—Boys' School	£10.	——	G. Dickinson Clerk to School Board, Bolton-upon-Dearne.
„	31	Hull—Extension of Town Hall	£300, £200, £100.	£5.	E. Laverack, Town Clerk, Town Hall, Hull.
„	31	Castleford, Yorkshire—Public Library	£15, £10.	——	H. A. Broadbent, Clerk to Urban District Council, Castleford, Yorkshire.
„	31	Chelmsford—Infectious Diseases Hospital	£25, £10.	£1.	A. S. Duffield, 96 High Street, Chelmsford.
April	4	Wycombe—Town Hall and Municipal Buildings	£110, £26 5s.	——	T. J. Rushbrooke, 77 Easton Street, Wycombe.
„	10	Yeovil—Laying-out Land for Town Hall, Municipal Buildings, Markets, &c.	£21, £10 10s.	——	Borough Surveyor, Yeovil.
„	14	Blackpool—Technical Schools	£60, £25, £15.	£1 1s.	J. S. Brodie, Borough Surveyor, Town Hall, Blackpool.
„	30	Fenton, Staffs—Library	£60, £30.	£1 1s.	S. A. Goodall, Surveyor, Town Hall, Fenton, Staffs.
„	30	Sunderland—Alterations to Hall	£100, £50, £25.	£5.	J. W. Moncur, Borough Engineer, Town Hall, Sunderland.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

Barry (Wales).—For the erection of a new infants school and for additions to and alterations of the existing boys' and infants' departments of Barry School, in High Street, Barry, for the Barry School Board. Mr. George Thomas, F.R.I.B.A., architect, Queen's Chambers, Cardiff:—

	Infants' school.	Girls' school.	Boys' school.
Jones Brothers	£5,136	£2,000	£2,800
Lloyd & Tape	5,125	1,778	2,832
Lattey & Co., Ltd, Cardiff	4,928	1,710	2,784
W. Britton	4,858	1,744	2,746
W. Thomas & Co., Cardiff	4,873	1,714	2,705
G. Rutter	4,765	1,634	2,600
D. Davis Cardiff	4,756	1,723	2,555
E. R. Evans & Brothers, Cardiff	4,747	1,553	2,576
D. W. Davies, Cardiff	4,675	1,656	2,490
W. Symonds, Cardiff	4,650	1,600	2,613
H. S. Rendell*	4,572	1,520	2,535
E. B. Smith-Jones & Sons †	4,570	1,325	1,670
Architect's estimate	4,666	1,563	2,574

* Accepted. † Withdrawn. [Rest of Barry.]

Bexhill.—For alterations and extensions to the electric light station, Bexhill-on-Sea, for the Corporation:—

F. G. Minter, Westminster	£2,772
H. E. Cruttenden, St. Leonards	2,694
T. W. Dexter, Bexhill	2,677
J. Jarvis & Son, Tunbridge Wells	2,598
Peerless, Dennis & Co., Eastbourne	2,548
W. H. Bailey, Bexhill*	2,475

* Accepted on condition that the works are completed within five month.

Biggleswade.—For the erection of a boys' national school at Biggleswade. Messrs. Townsend & Fordham, architects, Cross Street, Peterborough:—

P. Banyard, Cambridge	£1,850	0	0
J. Cracknell, Peterborough	1,686	0	0
E. Beech, Peterborough	1,631	0	0
W. Hawkins, Peterborough	1,613	5	0
R. Tongue, Watford	1,600	0	0
J. Potter, Bedford	1,589	0	0
W. Howard, Huntingdon	1,589	0	0
S. Redhouse, Stotford	1,586	0	0
C. Wright, Longford	1,583	0	0
C. Negus, Bedford	1,579	0	0
A. Hawtin, Northampton	1,565	0	0
A. Dawes, Bedford	1,557	0	4
F. Bailey, Ashwell	1,544	0	0
G. Eastwood, Market Harborough	1,516	0	0
T. Raban & Sons Baldock	1,499	0	0
Melcombe Brothers, Bedford	1,498	10	0
Stones & Skelton, Biggleswade	1,498	0	0
G. Page, Buckden	1,450	0	0
S. Hipwell, Wisbech	1,400	0	0
F. Wellham St. Neots	1,380	0	0
W. Wade,* St. Neots	1,339	0	0
J. Guttridge, Peterborough	1,338	19	5

* Accepted.

Clare (Suffolk).—For the supply of 2,000 tons of 1¾in. granite of approved quality, at per ton, delivered at Clare, Stoke, Haverhill, Dullingham and Newmarket Stations, on the Great Eastern Railway, in such quantities as the surveyor may direct, for the Clare Rural District Council. Mr. H. H. Pettett, surveyor, Wash Farm, Hundon, Suffolk:—

Parmor & Sons, Margate	£1,383	6	8
Grimley & Co., Sutton Bridge (Mountsorrel granite)	1,358	6	8
Charnwood Granite Co., Loughborough	1,300	0	0
Grimley & Co., Stoney Stanton (granite)	1,291	13	4
Whitwick Granite Co., near Leicester	1,283	6	8
L. Sommerfeld, King's Lynn	1,283	6	8
Forest Rock Granite Co., Leicestershire	1,275	0	0
Groby Granite Co., near Leicester	1,266	13	4
Globe Granite Co., Lime Street, London	1,266	13	4
Enderby and Stoney Stanton Granite Co., Narborough	1,258	6	8
H. L. Cooper, London	1,233	6	8
Croft Granite Co., near Leicester	£1,225	0	0
C. Abell, Atherstone	1,225	0	0
Cliffe Hill Granite Co.,* Markfield	1,225	0	0

* Accepted.

Earlestown (Lancs).—For the laying of water-mains in their district, for the Newton-in-Makerfield Urban District Council:—

J. J. Poole, St Helens	£3,566	15	3
F. Noonan & Son, near St. Helens	2,470	14	0
Wardman & Co., Warrington	2,414	10	10
C. J. Johnson, Liverpool	2,065	4	0
M. Webb, Stoke Newington	1,928	18	3
H. Varley, Hollinwood, Oldham	1,877	1	3
J. E. Kaye, Huddersfield	1,819	4	0
W. Winnard, Wallgate, Wigan	1,688	4	9
Bennie & Thompson,* 80 Liverpool Road, Warrington	1,647	16	10
T. Crawford & Son, Strahaven, N.B.	1,586	19	0
W. Jowett, Prescot	1,406	5	0
T. Jackman, jun., Chorley	1,215	7	0

* Accepted.

London, N.—For carrying out certain new sanitary arrangements, structural alterations, decorations and renovations in connection with Christ's College, Finchley, for the Finchley Urban District Council. Mr. H. T. Wakelam, M.I.C.E., county engineer, Guildhall, Westminster:—

G. W. & J. H. A. Claridge, Whetstone	£2,500	0
J. Peattie, London, W.	2,129	0
E. Boxall, Tottenham	1,923	15
W. Howie, Highgate, N.	1,920	0
Hardy & Son, Palmer's Green	1,865	0
B. Nightingale, Albert Embankment, S.E.	1,850	0
C. H. Bursill, North Finchley	1,763	14
Vigor & Co., Poplar	1,738	0
Parkinson & Son, London, W.C.	1,728	0
Patman & Fotheringham, London, W.C.	1,700	0
Ambrose & Co., Highgate	1,679	0
W. Tout, Hendon, N.W.	1,520	0
J. Stewart, Tottenham, N.	1,505	0
B. Finch & Co., Lambeth	1,498	0
H. Knight & Son, Tottenham	1,494	0
Voller & Goodfellow, Wood Green	1,390	0
F. W. Harris, Barnsbury, N.	1,375	0
C. R. Price, London, E.C.	1,368	0
Cooper,† London, S.E.	1,295	0
Spiers & Son,* 2 Hill Road, St. John's Wood, N.W.	1,274	0
Willcocks & Son, East Finchley	1,195	0
W. Dudley, New Southgate	1,125	0
W. T. Batchelor, East Finchley	1,119	0

* Accepted. † Out of Order.

TENDERS—*cont.*

Croydon.—For the erection of a private residence at Chatsworth Road, Croydon. Mr. Frank Windsor, architect, Bank Buildings, 1 High Street, Croydon:—

J. Saunders	£1,320
D. Waller	1,175
W. Potter	1,149
J. Horrocks*	1,121

* Accepted.

London, N.E.—For the construction of a public underground convenience adjoining Kingsland High Street, for the Hackney Borough Council. Mr. Norman Scorgie, M.I.C.E., borough engineer and surveyor:—

				A		
J. F. Holliday, London, E.	£2,297	0	0	£15	14	3
C. Castle & Son, Lower Clapton, N.E.	2,291	5	1	39	3	2
Spiers & Son, St. John's Wood, N.W.	2,049	0	0	72	0	0
W. S. Sharpin, London, N.E	2,031	0	0	54	5	0
A. E. Symes, Stratford, E.	2,012	0	0	52	0	0
C. W. Killingback & Co., Camden Town, N.W.	2,004	9	8	35	12	6
J. T. Robey, London, E.	1,940	0	0	44	9	0
Stapleton & Sons, Stoke Newington, N.	1,917	6	2	83	5	0
Doulton & Co., Ltd., Lambeth, S.E.	1,910	0	0	34	0	0
Foster Brothers, Norwood Junction, S.E.	1,873	0	0	83	0	0
B. Finch & Co., Ltd., Lambeth, S.E.	1,832	0	0	31	19	0
W. Shurmur & Sons, Ltd., Upper Clapton, N.E.	1,818	0	0	40	0	0
S. Kind, Leytonstone, E.	1,818	0	0	36	10	0
Davis & Bennett, Westminster, S.W.	1,790	0	0	26	12	0
J. Shelbourne & Co., London, E.C.	1,736	0	0	52	0	0
Sabey & Son, Islington, N.	1,690	0	0	55	0	0
G. Jennings,* Ltd., Lambeth Palace Road, S.E.	1,633	10	11	59	15	7

A.—If woodwork is carried out in pitch-pine in lieu of teak—deduct.

* Accepted.

London, S.E.—For the erection of a Congregational church, Denmark Hill, London, S.E. Mr. Alfred Conder, architect, Palace Chambers, Westminster:—

	Fences, Gates, &c.	Tower.	Church.
Staines & Son	£280	£1,470	£7,998
Lascelles & Co.	256	1,285	7,411
Brown & Sons	248	1,278	7,171
Bower & Co.	258	1,296	7,140
Grover & Son	260	1,305	7,075
L. H. & R. Roberts	250	1,280	7,048
Colls & Sons	220	1,247	6,[illegible]60
Stimpson & Co.	260	1,200	6,960
Courtney & Fairbairn	230	1,262	6,907
Rider & Son	235	1,177	6,828
Kingerlee & Sons	260	1,150	6,677
McCormick & Sons	218	1,077	6,652
Akers & Co.	192	1,140	6 491
H. Young*	213	1,117	6.447

* Accepted with modifications.

Moretonhampstead.—For the construction of sewers, manholes and disposalworks at Moretonhampstead, for the Newton Abbot Rural District Council. Mr. G. D. Bellamy, M.I.C.E., engineer, 6A Courtenay Street, Plymouth:—

W. C. Shaddock, Plymouth	£4,921	2	9
J. Shaddock, Plymouth	3,873	11	0
J. Dickson, Exeter	3,367	8	2
W. Brenton, Torquay	2,900	0	0
Hawking & Best, Teignmouth	2,776	5	0
E. Pike, Torquay	2,455	2	0
M. Bridgeman,* Paignton	2,428	10	0

* Accepted.

Norden (Lancs).—For laying a pipe sewer, 12in. to 21in. diameter, with manholes lampholes, &c., for the Urban District Council. Mr. J. W. Sunderland, surveyor:—

C. Kershaw, Rochdale	£8,0 6
T. Ashworth & Sons, Norden, Rochdale	4,454
T. Turner, Heywood	4,449
Bower Brothers, Halifax	4,270
J. Fletcher, Heywood	4,276
J. Moore, Rochdale	3,939
J. Poole, Littleborough, Rochdale	3,59[illegible]
R. Robinson & Son,* Rochdale	3,562

* Accepted.

Oxford.—For additions and alterations to 11 Winchester Road, Oxford, for Mr. D. R. Thomas. Mr. H. Quinton, architect and surveyor, 22 George Street, Oxford. Quantities by the architect:—

Wyatt & Son	£1,327	6
Simms & Son	1,250	0
J. Wooldridge	1 241	0
J. Peattie	1,228	0
Symon & Co.	1,197	0
Knowles & Son	1,139	0
Kingerlee & Sons	1,058	0

Rotherham.—For the construction of sewers, bacteriological tanks and filters, and other work connected therewith, at Thorpe, for the Sewage Works Committee. Mr. R. E. W. Berrington, M.I.C.E., engineer, Bank Buildings, Wolverhampton, and 28 Victoria Street, Westminster, S.W.:—

Jones Brothers, Stairfoot, Barnsley	£4,294
W. H. Reading, Wolverhampton	4,036
J. Cooper, Rotherham	3,790
R. Snell, Masborough, Rotherham	3,785
Graham & Sons, Huddersfield	3,529
W. R. Unwin, Ecclesfield, near Sheffield	3,368
C. Green & Co., Wellgate, Rotherham	3,228
Morley	3,193
C. Sprakes & Sons, Doncaster	3,148
J. Owen, Wolverhampton	3,135
Braithwaite & Co.,* 14 King Street, Leeds	2,906

* Accepted.

St. Asaph.—For the erection of a new infirmary at the St. Asaph Union Workhouse. Mr. James Hughes, architect, Denbigh:—

R. Jones, Holywell	£5,400
G. H. Marshall, Birmingham	5,349
T. Jones, Prestatyn	4,990
R. Williams, Colwyn Bay	4,907
D. Griffiths & Son, Rhyl	4,699
P. Edwards, Chester	4,650
E. Williams, Dyserth	4,470
W. H. Thomas, Oswestry	4,430
R. Evans & Sons,* Old Colwyn	4,397
Jones & Pritchard, Abergele	4,291

* Accepted. [Architect's estimate, £4,462.]

Southend-on-Sea (Essex).—For the erection of new Southchurch Hall schools for 1,280 children, for the Southend-on-Sea School Board. Messrs. Burles & Harris, architects, &c., Clarence Chambers, Southend-on-Sea:—

S. Parmenter, Braintree	£22,961
E. West, Chelmsford	22,686
W. E. Davey	22,300
Baker & Wiseman	22,078
R. Elvy	21,700
G. R. Whur	20,705
Davis & Leaney	20,477
Dupont & Co.	20,285
F. & E. Davey*	19,887
S. E. Moss	19,985

* Accepted. [Rest of Southend-on-Sea.]

Sleaford (Lincs).—For providing and laying 9,500yds. of 3in., 2½in. and 2in. cast-iron pipes, &c., for the supply of water to Great Hale Fen, for the Sleaford Rural District Council. Mr. Jesse Clare, C.E., engineer, Sleaford:—

Brown & Sons, Bootle	£2,787	0	0
T. Bell	2,187	16	0
Smithdale & Sons, Acle	2,053	8	6
W. Barker, Harrogate	1,907	11	8
D. H. Porter, Clapton Square	1,829	0	0
Rowland, Sandiway	1,836	0	0
Woldridge, Pedmore	1,806	17	4
Shardlow, Hyson Green	1,436	0	0
J. T. Barnes, Sleaford	1,375	0	9
W. Dickenson,* Heckington	1,286	0	0

* Accepted.

Wanstead (Essex).—For making-up roads and kerbing Chigwell Road, for the Wanstead Urban District Council:—

	Kerb.			Making-up Roads.
W. Thomas, East Ham	£282	18	4	£ —
J Jackson, Forest Gate	280	0	0	2,040
W. Manders, Leyton, N.E.	263	5	6	1,801
G. Bell, Tottenham Hale, N.	262	10	0	1,692
T. Adams, Wood Green, N.	261	0	0	1,549
Grounds & Newton, South Tottenham	238	17	6	1,659
W. & C French, Buckhurst Hill, Essex	230	12	6	1,173*
B. W. Glenny, Colchester	228	4	6	—
W. Griffiths, London, E.C.	227	17	6	1,300
Parsons & Parsons, Ilford Wharf, Ilford	2[illegible]5	0	0*	1,607
[Surveyor's estimate	240	0	0	1,180].

* Accepted.

Street (Somerset).—For the following works in connection with the new water supply to the town of Street, for the Street Urban District Council. Mr. A. P. I. Cotterell, A.M.I.C.E., engineer, 28 Baldwin Street, Bristol:—

	Contract No. 2.			Contract No. 3.			Contract No. 4.		
Gleed Brothers	£8,414	0	0	£4,235	0	0	£3,995	0	0
A. Wills & Son	7,523	5	0	4,099	2	6	3,563	13	0
Dart & Pollard	7,340	0	0	3,189	0	0	2,595	0	0
B. Cooke & Co.	6,959	0	0	3,661	0	0	3,006	0	0
W. & J. Bennett	6,850	0	0	4,300	0	0	2,850	0	0
R. W. Barker	6,632	5	2	2,998	11	4	3,911	4	6
J. & T. Binns	6 620	0	0	3,960	7	10	3,212	0	0
R. Wood	6,412	6	4	2,542	11	8	2,579	8	3
M. Lovell	6,214	0	0	3,504	0	0	2,872	0	0
F. Huish	6,060	0	0	3,162	7	8	2,580	0	0
Reid Brothers	6,020	0	0	1,912	15	0	—		
H. Roberts	6,000	0	0	1,800	0	0	2,800	0	0
T. Crawford & Son	5,960	0	0	2,000	0	0	3,800	0	0
Lloyd & Son	5,851	15	7	2,285	2	11	3,481	12	10
Hole & Roberts	5,587	15	7	6,230	11	2	—		
T. Vale	5,450	0	0	1,830	0	0	2,820	0	0
S. Ambrose	5,387	14	1	1,990	0	0	3,381	4	4
Rose & Crabree	5,250	0	0	1,755	0	0	..		
C. T. Perkins	5,092	17	8	2,443	17	4	2,952	14	10
Smith & Marchant	4.997	10	0	2,797	10	0	—		
Meredith & Co.	4,446	8	1	2,897	3	3	2,801	17	1
T. Jackman	—			1,761	8	1	—		
C. F. Johnson	—			2,804	15	10	—		
H. W. Pollard	—			—			2,692	0	0
Wright & Son*	4,236	10	9	1,643	6	10	2,543	19	10

* Accepted.

Current Market Prices.

FORAGE.

		£	s.	d.	£	s.	d.
Beans	per qr.	1	9	9	1	12	3
Clover, best	per load	4	7	6	4	15	0
Hay, best	do.	3	15	0	5	10	0
Sainfoin mixture	do.	3	15	0	4	5	0
Straw	do.	1	8	0	1	18	0

OILS AND PAINTS.

Castor Oil, French	per cwt.	1	1	0	1	2	2
Colza Oil, English	do.	1	3	0	—		
Copperas	per ton	2	2	6	—		
Lard Oil	per cwt.	2	13	0	2	14	0
Lead, white, groand, carbonate	do.	1	4	10	—		
Do. red	do.	1	0	4½			
Linseed Oil, barrels	do.	1	4	1¼	-		
Petroleum, American	per gal.	0	0	5¼	0	0	5⅜
Do. Russian	do.	0	0	4⅛	0	0	4¼
Pitch	per barrel	0	7	0	—		
Shellac, orange	per cwt.	5	16	0	—		
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Home Melt	per cwt.	1	10	3	1	11	0
Tar, Stockholm	per barrel	1	1	6	—		
Turpentine	per cwt.	2	3	4½	—		

METALS.

Copper, sheet, strong	per ton	73	0	0	—		
Iron, Staffs., bar	do.	6	5	0	8	10	0
Do. Galvanised Corrugated sheet	do.	11	0	0	11	10	0
Lead, pig, Soft Foreign	do.	12	18	9	13	2	6
Do. do. English common brands	do.	13	5	0	—		
Do. pig, English 3lb. per sq. ft. and upwards	per ton	14	0	0	—		
Do. pipe	do.	14	10	0	—		
Nails, cut clasp, 3in. to 6in.	do.	9	5	0	—		
Do. floor brads	do.	9	0	0	—		
Steel, Staffs., Girders and Angles	do.	5	15	0	6	5	0
Do. do. Mild bars	do.	6	10	0	7	0	0
Tin, Foreign	do.	136	10	0	137	0	0
Do. English ingots	do.	138	0	0	138	10	0
Zinc, sheets, Silesian	do	24	0	0	—		
Do. do. Vieille Montaigne	do.	24	10	0	—		
Do. Spelter	do.	22	0	0	22	5	0

TIMBER.

SOFT WOODS.

Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow	do.	5	5	0	6	5	0
Do. Pitch	do.	3	0	0	3	4	0
Laths, log, Dantzic	per fath.	4	10	0	5	10	0
Do. Petersburg	do.	7	5	0	—		
Deals, Archangel, White—							
Do. 2nd 3×11	per P.Std.	31	10	0	—		
Do. 3×9	do.	11	0	0	—		
Do. 3rd 3×11	do.	13	15	0	—		
Do. 3×9	do.	13	5	0	13	15	0
Do. 5th Yellow 3×9	do.	8	10	0	—		
Do. Riga	do.	6	15	0	12	10	0
Do. Petersburg 1st Yellow	do.	10	10	0	11	5	0
Do. do. 2nd do. 3×9		11	0	0	—		
Do. do. 3rd Yellow 3×9	do.	9	15	0	—		
Do. Onega, 2nd White—2×7 & 2×8	do.	8	12	6	—		
Do. do. 5th Yel. 3×9	do.	9	15	0	—		
Do. Petschora, unsorted—Yellow 3×8	do.	9	15	0	—		
Do. do. do. 3×7	do.	9	12	6	—		
Do. Pitea, unsorted Yellow 3×7	do.	8	15	0	--		
Do. Asbacka, Yellow 3×9	do.	8	15	0	—		
Do. Munksund, 3rd Yellow 3×9	do.	11	5	0	—		
Do. Ranea, 1st & 2nd Yellow 4×9	do.	12	10	0	—		
Do. do. do. 3×9	do.	12	5	0	—		
Do. Nederkalix, 1st Yellow 3×11	do.	14	10	0	—		
Do. do. do. 2×11	do.	14	0	0	—		
Do. do. do 4×9	do.	12	10	0	—		
Do. Batsican, 2nd Spruce 3×9	do.	10	5	0	—		
Do do. 3rd Spruce 3×9	do.	9	15	0	—		
Do. Port Leamington, 3rd Yellow Pine, 3×9	do.	10	10	0	—		
Do. do. do. 3×7	do.	9	10	0	—		
Do. Marver mixed (1st & 2nd) Yellow, 3×9	do.	10	15	0	—		
Do. do. do. 2½×7	do.	8	5	0	—		
Do. Sandarne, 1st and 2nd White, 3×11	do.	13	0	0	—		
Do. do. 3rd Yellow, 2½×6	do.	10	5	0	—		
Do. Oserka, 4th Yellow 4×9	do.	12	5	0	—		
Do. do. do. 3×9	do.	12	0	0	—		
Do. Montreal, White Spruce 2nd 3×7	do.	7	8	0	—		
Battens, all kinds	do.	6	15	0	12	5	0
Flooring Boards 1in. prepared, 1st	per square	0	10	3	—		
Do. 2nd	do	0	9	9	—		
Do. 3rd &c.	do	0	8	6	0	9	6

HARD WOODS.

Ash, Quebec	per load	3	12	6	—		
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	15	0	0	20	0	0
Cedar, Cuba	per ft. sup.	0	0	5¼	—		
Do. Honduras	do.	0	0	$4\frac{5}{16}$	—		
Do. Tobasco	do.	0	0	$4\frac{13}{32}$	—		
Elm, Quebec	per load	4	0	0	5	2	6
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0	0	5⅜	—		
Do. African	do.	0	0	$4\frac{13}{16}$	0	0	5½
Do. St. Domingo	do.	0	0	3¼	0	0	6
Do. Tobasco	do.	0	0	$4\frac{21}{32}$	—		
Do. Cuba	do.	0	0	$10\frac{19}{32}$	—		
Do. Lago	do.	0	0	$3\frac{15}{16}$	0	0	4⅞

Trade and Craft.

A Silicate-of-Lime Building Stone.

An exhibition of samples of the new silicate-of-lime stone, the invention of Mr. R. P. Ford, has been on view this last fortnight at 73, Coleman Street, E.C., and will remain open this week. It is a remarkably interesting collection, and certainly the samples show this artificial stone to the utmost advantage. They look exactly like natural stone, except they are more even in colour and texture. Several examples of carving are shown which prove that the stone is most even in working, and we are assured that the great defects to which all artificial stone made with lime by the application of superheated steam is liable—namely, the silication not being equally effected in every part, especially in the interior of the block, soft pockets being found—have been overcome by Mr. Ford by means of most expensive machinery; it being stated, in fact, that the five years' experimentation has cost £34,000. Samples of various tints, textures and hardnesses of the stone are shown, and one that has been exposed on a roof for three years to show it does not get dirty in a town atmosphere and that it weathers well. The variations in colour from a clear white to a warm cream or pink are obtained by using various coloured sands. Very large blocks have been obtained, one of the greatest difficulties in former attempts at this class of stone, some being as large as 6ft. by 3ft. The claims upon which the utility of this stone are based are briefly that it resists weather better than the natural stones, Bath and Portland; is even in colour and texture, and has a greater crushing strain. To a great extent this can only be proved by time, but excellent results have been obtained from tests upon small samples. The great element upon which the weathering capabilities of Mr. Ford's stone is based is that the cementing matter by which the grains of sand are held together is silicate of lime, upon the formation of which the good qualities of Portland cement and hydraulic or blue lias limes depend. Portland cement is not used in the stone to obtain this silicate of lime, but a hydraulic lime is hydrated first by hot water, superheated steam and pressure in a cylinder being relied upon to turn the free lime into the silicate by combination with the sand (silica). We are informed that fat limes can be used, but then the process takes longer, and presumably is not so efficient. The process, of course, is the old one, but Mr. Ford's invention consists in the machinery by which he claims to have overcome all the elements which produced failure in other stone. The samples which he shows are not loose in texture, with the consequence that they are not greatly porous and will therefore resist frost, one of the great destructive agents of stone. Mr. Ford was Her late Majesty's Attorney-General in the Transvaal when annexed in 1877, and the means by which he came to foresake his vocation as a lawyer for that of a maker of artificial stone is partly to be traced to the fact that he lent some money on a silica quarry at Ffrith, near Wrexham, some years ago with the idea of supplying silica for glass manufacturers. Belgian competition however, killed the venture, and then Mr. Ford become possessed of the quarry. Not caring to lose the money he had advanced, he set about trying to turn the venture into prosperous ways. He heard of the German system of making silicate-of-lime stone, and thereupon employed experts to advise on the question of adopting the German system at the quarries. A factory followed, and the stone was duly turned out, but it was found that large numbers of the blocks were cracked and flawed. Mr. Ford got rid of experts, and with the aid of a few other men experimented until he succeeded in turning out large, perfect, blocks of the silicate-of-lime stone, a result which is unattainable by any other manufacturer of the stone.

After all, the great thing is cost, and Mr. Ford states that the stone can be produced for about 4d. per foot cube, and sold for about 10d. as against 11d. for Bath and 1s. 6d. for Portland stone. The labour of working is about equal to Portland. Tests as to its strength show it about three times that of Portland, and it resists the action of acids better than Portland or Bath.

A Smoke-Curing Cowl.

When men were of oak and beds of straw the smoke found its way out of a hole in the roof, and nobody gave a thought to it: but time has changed things, and nowadays with men of straw and oaken beds we must have no smoke in our rooms. More especially the problem is a city one, and there are two aspects of it—the public and the private—for while it is nothing to the public that a man's room may be foul so long as his chimney does not smoke, the individual is equally indifferent whether his chimney belches forth volumes of smoke so long as his room is free from it. Perry's "Certainty" Smoke-Curing Cowl Co. is concerned only with the latter aspect of the question. The cowl is made in galvanized iron and in terra-cotta. The cost of an iron one 3ft. high without base, to slip into an existing chimney pot, is 21s., or 30s. for a 6ft. cowl with flange and straps: while, with base, the cost is 25s. for a 4ft. cowl and 33s. for the larger size: in terra-cotta, red or buff, the price is 25s. for one 3ft. 6in. high, with base. The cowl is not mechanical, and is therefore free from noise; it can be thoroughly swept by ordinary means, and is guaranteed to work satisfactorily in any wind. The company's offices are at 64, Finsbury Pavement, E C.

Drilling Square and Angular Holes.

A very ingenious and useful invention for drilling square and angular holes has been introduced to the English market by Messrs. Curtis, Gardner and Boxwell, Ltd., who will be glad to allow anyone to see it in operation at their London offices, 25, College Hill, Cannon Street, E.C. It is called the "Kinemat" apparatus and is an adaptation of the principle of the Cardan circles, but the distinguishing feature is that it can be easily and quickly applied to any ordinary drilling machine or lathe. The apparatus comprises a clamp carrying a drill-guide fitted to a spindle-bearing by means of screws and pawls. To the spindle-head a crosshead is attached and a steel plate screwed underneath to serve as a thrust-block for the drill. The latter is driven by another crosshead screwed to the drill itself and actuated by the spindle crosshead. As the drill continually changes its position with regard to the centre axis of the spindle, rollers are provided on the cross-head to reduce friction. The drill slides in a guide comprising two or more cheeks, which render adjustment easy. Two movable plates work in a groove on the borer guide and are provided with points corresponding with marks struck in the work to be bored; the points are placed thereon by regulating the cheeks; the boring will then take place exactly according to the shape of the guide. As a rule, the guides only require to be exchanged when the profile of the bore-hole is changed, but if the same profile is required it is only necessary to insert other borers or drills. The borer is so formed that its underside is sharpened after the manner of the cutter, whilst the lateral cutting surfaces are hollowed out; grinding can thus be easily and rapidly performed. The device is one that should meet with favour in trade circles, as it greatly facilitates the cutting of square, triangular, sexagonal and other-shaped holes in wood, stone, iron and other materials. As a time-saver it is computed that the apparatus will drill 120 holes in the time taken by a skilled artizan in cutting one.

Guaranteed Gearing

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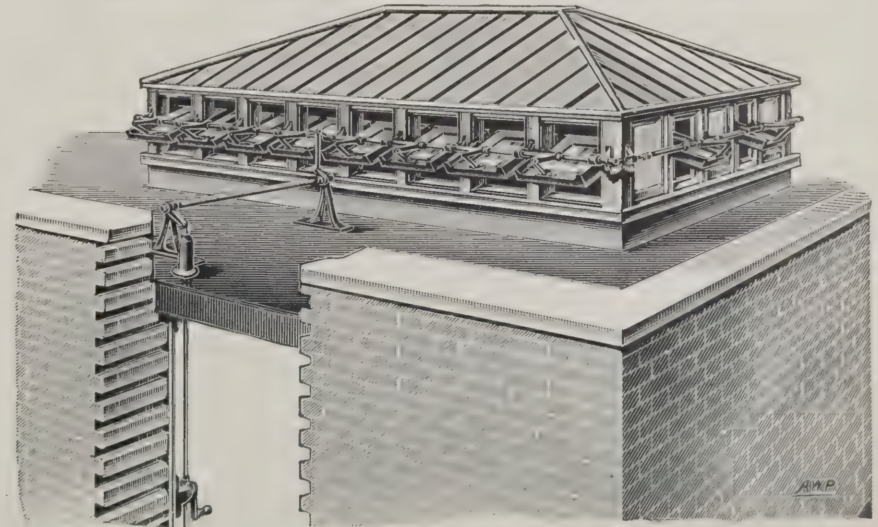
This Illustration shows the Gearing fixed outside, the Controlling Handle being within the Room.



Coming Events.

Wednesday, March 11.

ARCHITECTURAL ASSOCIATION (Discussion Section).—Paper on "Electric Lighting of a Small House," 7.30 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Meetings of Examination and Literary Committee at 3.30 p.m., General Purposes and Finance Committee at 4.15 p.m., Election Committee at 5.15 p.m., and Members' Sessional Meeting at 7 p.m. Mr. L. Aglio Dibdin on "General Municipal Engineering."

SANITARY INSTITUTE.—Discussion on "Sewage Disposal and the Qualities essential in a Sewage Effluent," to be opened by Mr. George Reid, M.D., D.P.H., 8 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.- Mrs. Traquair on "Decoration," 8 p.m.

SOCIETY OF ARTS.—Mr. T. Brice Phillips on "Existing Laws, By-laws and Regulations relating to Protection from Fire, with Criticisms and Suggestions," 8 p.m.

Thursday, March 12.

MANCHESTER SOCIETY OF ARCHITECTS.—Discussion on Students' Drawings.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—Conversazione at the Galleries of the Royal Institute of Painters, Piccadilly.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Technical Demonstration on Electric Power and Lighting at Messrs. Egan & Tatlow's, 19 and 20 Fleet Street, Dublin, at 4 p m.

Friday March 13.

INSTITUTION OF CIVIL ENGINEERS (Students' Meeting).—Mr. A. R. Langton on "The Reconstruction of the Midland Railway Bridge No. 27, over the River Trent," 8 p.m.

INSTITUTION OF ELECTRICAL ENGINEERS.—Messrs. A. D. Constable and E. Faussett on "Distribution Losses in Electric Supply Systems," and Mr. M. B. Field on "A Study of the Phenomenon of Resonance in Electric Circuits by the aid of Oscillograms," 8 p.m.

Saturday, March 14.

JUNIOR INSTITUTION OF ENGINEERS.—Conversazione at the Westminster Palace Hotel at 7 p m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Colinton Mains Hospital, by permission of Mr. R. Morham, City Architect.

ARCHITECTURAL ASSOCIATION.—Third Spring Visit.

Monday, March. 16.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Mr. Charles Hadfield on "Westminster Cathedral," 8 p.m.

LIVERPOOL ARCHITECTURAL SOCIETY.—Mr. Laurence Hobson, A.R.I.B.A., on "Ancient Churches of Wirral."

Tuesday, March 17.

SOCIETY OF ARTS (Applied Arts Section).—Miss Hannah Falcke on "Artistic Fans," 8 p.m.

GLASGOW ARCHITECTURAL ASSOCIATION.—Sir John Stirling Maxwell on "Contemporary Architecture from a Layman's Point of View," 8 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Mr. J. Schlentheim on "Mosaic," 7.45 p.m.

Wednesday March 18.

EDINBURGH ARCHITECTURAL ASSOCIATION (Associates' Section).—Mr. W. Davidson on "Church Decoration," 8 p.m.

Bankruptcies.

G. H. SHAW, plumber, painter, &c., Fenton, Stoke-on-Trent. Receiving order made November 4th, 1896. Liabilities £368; assets £65. Dividend of 3s. 4½d. in the £ paid and estate closed April, 1897. Discharge granted March 4th last.

T. TAYLOR, builder, Bengeworth, Evesham. A receiving order has been made in the Worcester Bankruptcy Court on the debtor's own petition.

JENNINGS & ROFFEY, painters and pagerhangers, Aston, Birmingham. Receiving order made February 27th and debtors adjudicated bankrupts.

R. PEAKE, painter and glazier, Aberystwith. Gross liabilities £856; £801 to rank as dividend; deficiency £527. Public examination and meeting of creditors held on February 27th.

A. J. WILLIMONT, builder and contractor, Yarmouth. Liabilities £4 055; deficiency £2,516. Public examination held on March 3rd and adjourned.

COCKRELL BROTHERS, builders, Gorleston, Yarmouth. Liabilities, £317; assets estimated to realise a similar amount. In the separate estate of W. G. Cockrell liabilities were returned at £1,006 and deficiency £242; and in that of J. W. Cockrell, liabilities £778 and deficiency £503. Public examinations closed March 3rd.

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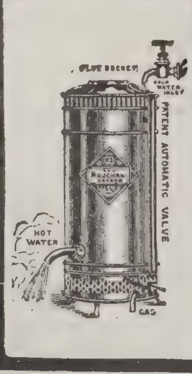

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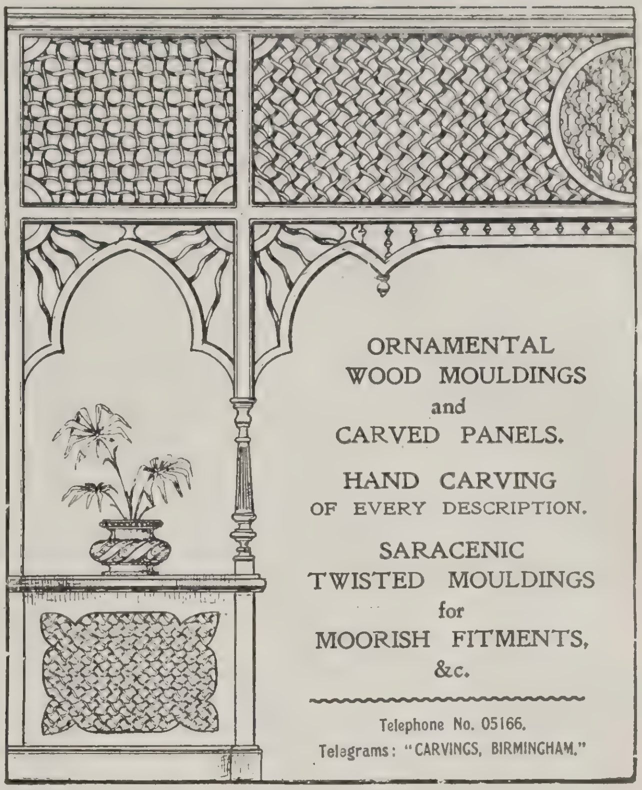

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Obituary.

Mr. Benjamin Heath, builder, of Exeter, died recently.

The late Mr. H. T. Wells, R.A., died worth nearly £50,000.

Mr. F. Yeats Edwards, who was to have read a paper on "Some Features of Japanese Architecture" before the Japanese Society to-day, died about a fortnight ago.

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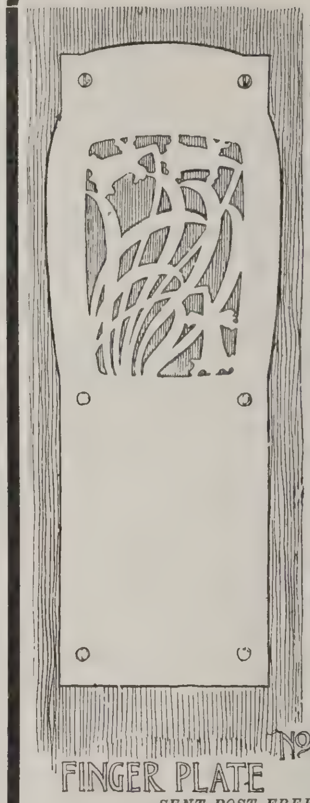

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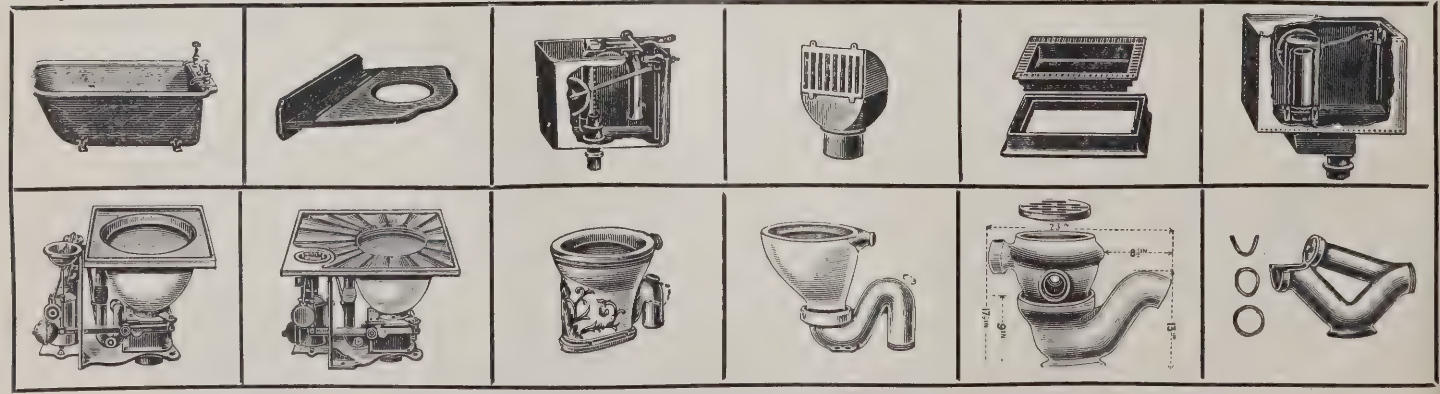

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THE
BUILDERS' JOURNAL
AND ARCHITECTURAL RECORD.

March 18, 1903. Vol. 17, No. 423.
9, East Harding Street, E.C.

The Academy Damper. It has been stated that the number of works submitted to the Academy by outsiders is to be reduced from eight to two and those by members from eight to six; but this is somewhat premature. Resolutions to that effect, it is true, were passed at the general assembly held after the recent assembly, but these need to be ratified by a second general meeting of Academicians: and as the proposal is not by any means new, having been rejected some years ago, this is not a mere formal procedure. It is probable, however, that the stronger reforming element will effect the change, more or less as stated. Nothing of course will influence this year's arrangements. For ourselves, we are only interested in the architectural side of the question. About 250 drawings are hung in the architectural room at the Academy, and remembering that the total number of pictures hung is about one-tenth of those submitted, we might hazard that about 1,000 architectural drawings are sent in every year. Under the new régime we do not think there would be much change in the architectural room. But the hanging committee would be saved a great deal of trouble. We do not suppose there are many architects who submit eight drawings to the Academy, but four are often sent by men whose work has no chance of being accepted. A reform which is far more urgent than this is the admission of photographs, which provide the most accurate representations of buildings. Architects are concerned with what actually is: photography shows that. There may be drawings in addition, but the Academy does a great injustice by not admitting photographs in the architectural room.

The Decorations of St. Paul's. Sir William Richmond seems to think that he alone has made up his mind in regard to the decorations of St. Paul's Cathedral. He is proudly dogmatic about them; insists, very properly, on being allowed an absolutely free hand; has a fine scorn for the critics of the press and those whom he calls "sham classical gentlemen"; and made the stipulation before he commenced the work that his designs were not to be submitted to the approval of the British public. All this may be very well, and doubtless the task set is a vast and difficult one. But it is the general opinion of those in a position to speak that the decorations now being carried out in St. Paul's are not in the spirit of the building. Sir William may talk about the use of colour on European buildings, and he may jeer at the architecture which did not use colour. St. Paul's is of that architecture, the work of an Englishman and essentially English in feeling. Sir William's decorations are essentially Byzantine in feeling. Disconnected from the building, we admire them in part, but consider them quite inappropriate to St. Paul's. Sir William says he will be judged by posterity, and that if one hundred years hence his work is proved to be a mistake, then let it be hacked out. But the building is not going to be unharmed by that process; and we recall the fact that certain gross stencilling and cutting into the stonework which the artist thought proper has already been stopped by protest. The colour-scheme in the choir is harmonious, though we do not admire some of the details of its decoration—the angels especially—but the mosaics in the quarter-domes of the crossing are very discordant, and we equally dislike Sir William Richmond's windows. We grant him the difficulty of decorating so vast a building, but cannot approve them like he does himself.

Nesfield's Lodge, Regent's Park. At the head of the Broad Walk, Regent's Park, is a lodge which was erected in 1861 from the designs of the late William Eden Nesfield. When this lodge was built Nesfield's father was laying-out the Broad Walk as a garden, Mr. Cowper-Temple (afterwards Earl Cowper) being First Commissioner of Works and Buildings, and it was to this circumstance that the young architect—who had only recently returned from abroad—owed the commission. The lodge, which is of simple design, was a great favorite with its author, who made all the details with his own hand and cut off the ends of the pins of the window-frames with his pocket-knife in order to ensure that they should be uneven and look like mediæval work. The lodge cost £800, and Nesfield predicted at the time that it was the last job he was likely to get from the Government. The lodge is so unique that it is a matter of great regret to see the condition in which it has been allowed to fall for want of proper supervision. The bench in the open loggia which formed a striking feature in the original design has been removed, the loggia is enclosed with iron gates of a commonplace pattern, and the lights at the ends of the loggia are glazed with the abomination known as cathedral glass much patronised by church restorers. The roof has been mended in places with machine-made plain tiles, which do not weather like hand-made tiles and give the roof a spotted appearance; the cement fillets have been clumsily repaired; and to crown all, the whole of the external woodwork, which is of oak, has been painted a dirty brown colour. (Seasoned oak when exposed to the weather acquires a silvery tone and will last for centuries, but if painted soon decays.) Is it too much to ask the Government to pay a little more attention to this unique work of art, which, from neglect, is rapidly becoming dilapidated and in the near future will probably have to to be restored at great cost?

Concrete Houses. We notice that the Liverpool Corporation has decided to build a concrete tenement for the working-classes as a trial of their engineer's proposal; and we also notice that "one of the largest owners of cottage and other houses in the Kingdom" writes to a Liverpool newspaper disparaging the scheme, having tried it twenty years ago and discarded it. There is certainly nothing new about houses built of concrete. One may point to many lamentable failures in them, but there is no legitimate reason why they should not be satisfactory. A brick wall is considered under the by-laws as one-third stronger than a concrete one, which means that the latter has to be 12in. thick if the former is 9in. But that is a regulation based on bad workmanship. As a matter of fact, a properly-made concrete wall is stronger than a brick one—it has no beds, for one thing—but the by-law doubtless considers that garden mould and other rubbish may be regarded as fit material to mix for concrete. Houses built of that kind of concrete are not likely to be satisfactory; nor are houses which, instead of being built up regularly all around, are erected piecemeal, so that the walls become disjointed blocks. At Liverpool we may be sure no such methods will obtain. The idea is to build a three-storey tenement on a site in Eldon Street, each tenement comprising a living-room 15ft. by 10ft. 3in. and two bedrooms averaging 7ft. 4in. by 14ft. 9in. with a height of 10ft. Concrete made of crushed clinker from the refuse-destructors and Portland cement, with a small amount of embedded steel, will be used for the entire building, the cost of which is set down by the engineer (Mr. John A. Brodie, M.I.C.E.) at £1,230 and the site at £247 16s. Against this total of £1,477 16s. is to be set the rent of twelve tenements at 4s. a week each—£124 16s.—which, after deducting £50 for outgoings, will give 5 per cent. on the capital expenditure.

SOME CAMBRIDGE COLLEGES.[*]

By J. A. T. HOUSTON.

So few architects visit Cambridge as compared with Oxford that, whereas Oxford seems to be regarded as the architectural Mecca of England, Cambridge is treated as if it were of far less interest: yet, in my opinion, it is in no way architecturally inferior to its learned sister, and I confess to a distinct partiality for Cambridge.

Cambridge appears to retain much more of its mediæval collegiate character, has not felt the withering touch of the restorer so much, and is less changed by the hand of modern progress, which is so direful a thing for architecture—for, whatever we have progressed in since the days of Wren, Gibbs and their Gothic predecessors, a visit to such a town as Cambridge clearly shows it is not in the art of erecting beautiful buildings. The contrast will be the more pronounced if you visit some of the leading thoroughfares of London immediately afterwards.

Here in Cambridge we find, for instance, a dining-hall built just as the Gothic tradition was dying out, with high mullioned and transomed windows, open-timber roofs with one side of the exterior hidden from view by an erection of most developed Renaissance style (as at Trinity College), or, again, the well-known example of St. Mary's Church, Oxford, where Inigo Jones's beautiful porch is built on to the Gothic edifice. But in these days they did not trouble themselves in the least with styles which they did not understand, and rightly considered dead and decently buried, but built in the tradition that had been handed down to them and which they thoroughly understood.

Ancient Cambridge was situated wholly on the left bank of the River Cam, from which it took its name. Roman remains have been found in sufficient abundance to identify it with the Roman station Camboritum. The Normans built a castle on the same ground which the Romans had occupied, but this never appears to have acquired any great strength or importance; in fact, it is recorded as being in a ruinous condition as early as 1441, and subsequently it acted as a quarry for obtaining material for constructing and repairing some of the colleges. The gate-house, the last remnant, was demolished in 1842 in clearing the site for the county jail.

The religious orders early established themselves here. First the Augustinian priory of Barnswell was founded in 1112. The Franciscan House claims the year 1224 as its origin. The Benedictine nunnery of St. Rhadegund was founded in 1133. Two years later the Augustinians founded St. John's Hospital. The Carmelites founded a house in 1249. In 1257 the Friars of the Order of Bethlehem established themselves at Cambridge, and the following year saw the foundation of the Friars of Penitence or Sack. Then twenty-seven years elapsed before the Dominicans were founded. Fifteen years later (in 1290) the White Canons opened a house, and the Austin Friars in the same year.

The mediæval university in its original form was an association of learned men combined for the purpose of teaching, or in some cases a combination of teachers and scholars for their mutual protection, as, many of its members being foreigners, these became a prey to the extortions of the townsmen.

As time showed the benefits derived from the institution, and the educational and ecclesiastical advantages that accrued to the clergy, the university received royal and ecclesiastical authority and protection. The university or corporation so formed then received the sole privilege of tuition within a certain area or district, and no person could teach within that district without receiving the sanction of the university.

This university also obtained the power of conferring degrees on its scholars when they had passed through its curriculum and had displayed their abilities. This degree took the form of a public ceremonial, and is the foundation of the M.A. degree, and entitled the holder to teach.

At the formation of such a corporation its structural wants were few and easily satisfied. Its members required a place to hold ceremonies, teaching-halls and library. Existing buildings would be obtained, as the slender funds of the university would not allow of the erection of special buildings.

As the university gained age and strength it outgrew its primitive home, and special buildings became a necessity. The buildings themselves would naturally keep pace with the growth in numbers of the members of the institution and the increased range of the subjects taught within its walls.

A college, however, was primarily founded by wealthy benefactors for the housing and maintenance of poor students, and sprang from a humble beginning. The first college, founded in Paris, was endowed for eight scholars. At their inception these colleges, like the university, found their homes in the ordinary town dwellings of a humble and utterly unattractive exterior, and of incommodious and inconvenient interior.

KING'S COLLEGE CHAPEL, CAMBRIDGE: RIVER FRONT.

As the system was more widely used it seemed to commend itself to the mediæval philanthropist much the same as his modern representative bestows his favour on a public library. It had possibilities of popularity for the eminent churchman and courtier not thought of before These benefactors then considered their colleges lasting monuments to themselves, as ensuring their names being gratefully remembered by posterity; and the necessity for erecting buildings of a highly architectural and monumental character, such as they saw in the ecclesiastical work of the period, came to them as an inspiration.

As the development of the college by successive foundations revealed the type of building best suited to its needs, each new benefactor vied with his forerunner in the completeness and magnitude of his college. These colleges were each a complete community in themselves, governed by a code of rules, possibly provided for them by their founders and modelled in the monastic system.

The word "college" means a number of persons incorporated together for the prosecution of certain common purposes. In the thirteenth century dwelling-houses were known by the names of house, hall, inn or hospice. As I have already remarked, the first colleges consisted merely of dwelling-houses. The colleges in some cases retain the appellation of house or hall to this day.

The collegiate system owes its origin to the brain of Walter de Merton, the founder of Merton College, Oxford, Lord High Chancellor of England, and afterwards Bishop of Rochester. Merton devoted more than twelve years to the elaboration of the plans of his college in Oxford, during which period they were constantly changed as directed by acquired experience, which is always the case with all good and valuable work. Merton died in 1277, three years after the completion of his college, so that he did not long survive to witness the result of his toil and philanthropy. He must then have been seventy years of age, so that his plans represent the matured views gained by the experience of a long and active life. The first charter for the House of Scholars of Merton is dated 1264. This, then, is the formation of a university and its dependent colleges.

The majority of the Cambridge colleges have two or more quadrangles, the last facing the River Cam, along the banks of which and on the opposite side they have gardens, tennis-courts, &c. These are known by the name of "The Backs," the most delightful part of Cambridge.

There are sixteen colleges in Cambridge. I shall endeavour to give a brief history of the two principal ones, King's College and Trinity College; the rest I shall deal with in a very superficial manner.

King's College.

This college is rightly called King's, as it was founded by a king, and during the first three centuries of its life owed its maintenance and its growth to the kings of England, though in many periods of its history they were slender reeds to lean upon. The first beginning of this college that I can trace is by King Edward II. in the tenth year of his reign, July 7th, 1317, supporting scholars at Cambridge, the earliest notice of which occurs in a writ of that date commanding the sheriff of Cambridge to pay various moneys to "our dear Clerks John de Baggeshote and 12 other children of our Chapel at the University of

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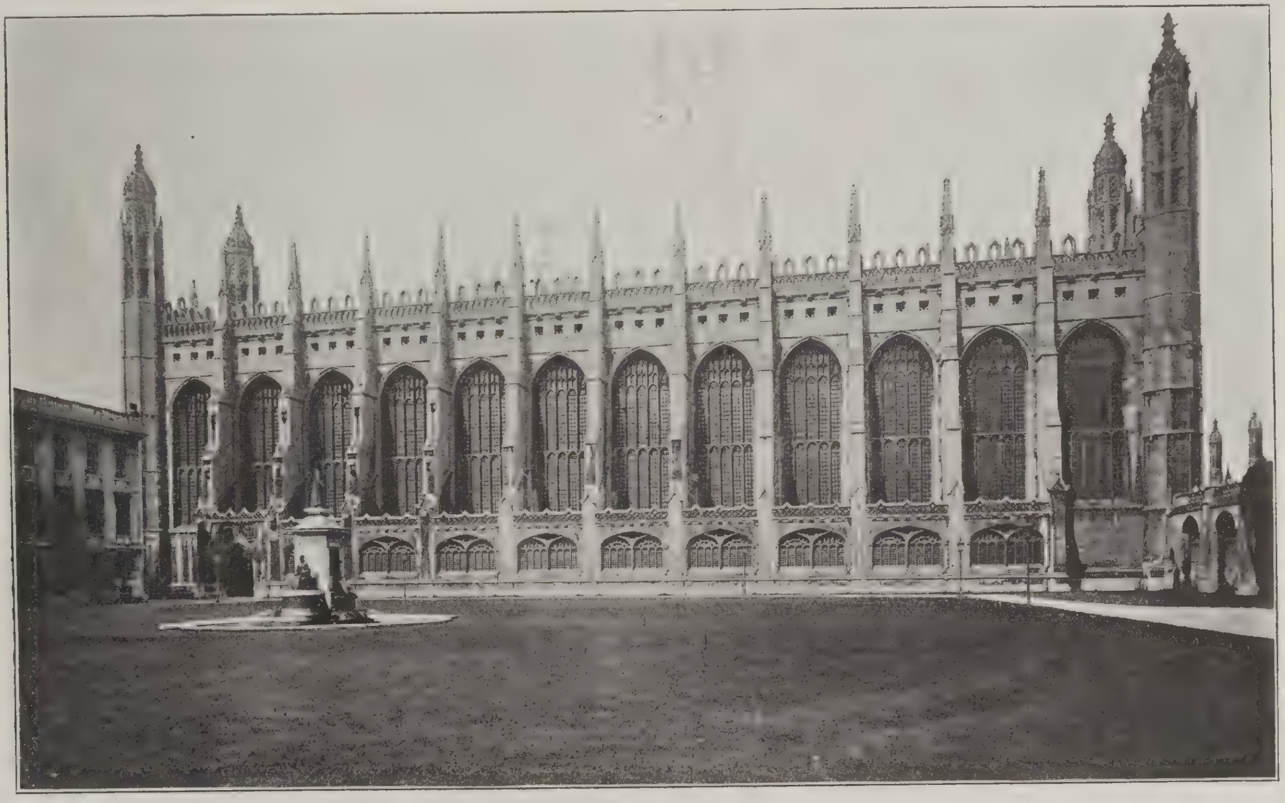
[*] A paper read before the Edinburgh Architectural Association on January 28th, 1903.

Cambridge." This benefaction developed into King's Hall. Edward must have endowed this college by the advice of some of his favourites, as he himself spent his days in hunting and his nights in revelry—probably it was done as a salve to his conscience, or perhaps as a thanks-offering, as the years immediately preceding 1317 were years of famine and plague.

The first building, called Old King's Hall, was erected on the site where University Library and School now stand. The old court, which had been sold to the University by the college, was (with the exception of the gateway) destroyed in 1835, as the University contemplated the erection of a new library on the site. They actually pulled down the old court of King's before they had a scheme developed even for its rebuilding. This act of vandalism brought down the righteous wrath of the community on their heads, which had the good effect of preserving for us the gateway. This building was commenced in the year 1441, during the reign of King Henry VI., who laid the foundation-stone in person. This monarch took the most lively interest in the college, and to him we owe that magnificent structure, the chapel.



KING'S COLLEGE CHAPEL, CAMBRIDGE: FRONT TO QUADRANGLE.

King Henry founded two royal colleges—Eton College and King's College, Cambridge. He gave the most detailed and carefully considered written instructions in regard to the building of both. These written documents are known by the title of "The will of King Henry VI." This is not of testament in the shape of a bequest, but merely what the king calls in his opening sentence "My will and mine intent," meaning his instructions and his desire. Three copies were made of this document. One is in the possession of Eton College, another is in that of the college of which I speak, and the royal founder himself probably retained the third and last copy. They contained a clear and well-considered plan for the foundation of both colleges, though, of course, with some differences required by the necessities of each case. The king closed his will with an appeal to his executors and assigns to carry out his wishes: but it is almost pathetic to think of his beautiful scheme abandoned and forgotten within a few years by all except the college authorities, who could do nothing for lack of funds.

Both colleges were commenced in accordance with the will, but neither was completed. At Cambridge the chapel alone, the gem of Cambridge, was begun by the founder, and in subsequent reigns entirely completed. To the south of the old court of King's lay a busy and thriving part of the town up to and including the year 1449. The king, however, had set his mind on acquiring this as a site for the new college which he proposed to build. He had agents in treaty for several properties the ground of which was much divided and covered with a labyrinth of streets. This naturally created many difficulties with the numerous proprietors and the Corporation, but these were overruled, and finally the ground was acquired in 1449.

The preliminaries having occupied a period of about eight years, the agents then commenced to clear the ground which forms the present noble site of King's.

King's College Chapel.

As I have said, the chapel was the only part of King Henry's design which was carried out, and it was not finished till fifty years after his death. From the accompanying illustrations some idea can be formed of what the appearance of the entire college would have been had it been carried out to the same high scale. The chapel was intended to be one side of a square, the other three sides being composed of chambers, library, &c. In the space to the west of the square, between the present Fellows' building and the river, there was to have been erected another quadrangle the dominating feature of which was to be a huge square tower rising high above the chapel.

The foundation-stone was laid by the king in person, with much pomp and ceremony, on St. James's Day, July 25th, 1446.

The country at this time was in a most disturbed and revolutionary state, as the Wars of the Roses had commenced—Henry himself lost his throne in 1461, and died a year later.

Among the several overseers of the works, the most prominent was perhaps a certain Robert Wordelake, whom they accused of embezzling the funds. History does not record whether this gentleman cleared his character at the time or not; but he left a document in the possession of St. Catherine's College proving his innocence and, in fact, making himself out as a benefactor to the college.

King Henry appears to have been very anxious to see his college completed, as when he was made prisoner by the Earls of Salisbury and Warwick, in the year 1455, he got them to pledge their word that they would provide funds for the building of the college, especially the chapel. This they did for a time (partly to gain his confidence), until the country was torn by civil war and payment stopped altogether.

The Earls were to pay £1,000 a year from the Duchy of Lancaster; this, however, was never paid regularly, as in four years only £1,000 had been paid. After the death of King Henry the work ceased for almost twenty years. The college, however, kept it in repair, and even struggled to carry on the work. King Edward IV. caused work to be resumed in 1477, but it did not progress much. Three years later (a year before the King's death) the work proceeded with greater activity, the monarch having promised 1,000 marks a year for three years.

Richard III. put a little more energy into the work, as in 1488 he granted letters patent to the overseer desiring "the building should go on with all possible dispatch, and directing him to obtain material and workmen, and authorising him to commit to prison all who should oppose or delay him."

There were no trades-unions in those delightful days.

The king appeared dissatisfied with the progress of the works, so he sent down his own plumber and glazier to hasten it, and there is a record of the college providing fish, capons, pigeons, rabbits and veal for them. The death of Richard III. caused a stoppage of the work for twenty-four years, and it was not resumed by Henry VII. till the year before his death, 1508. During this time about 140 workmen were employed.

UNIVERSITY LIBRARY CAMBRIDGE.

It is interesting to know the rates of their wages. The master-mason received £13 6s. 8d. a year; masons and inlayers 3s. 4d. a week; rough layers, sawyers, carpenters, 6d. per day, and labourers 4d. per day; and no mention of fish or veal for their entertainment, as the king's men had.

On March 24th, 1509, the king gave a sum of £5,000, which was all used by the beginning of 1512, when the late king's executors gave a further sum of £5,000, with a strict injunction to bring the chapel to a speedy completion. These moneys provided for the erection of the great stone vault, for the porches and sixteen of the chapels, and the four corner towers. There appears to have been quite a number of contractors on the job. One built one of the corner towers as a sample, for which he got £100; this was so satisfactory that he got the other three to construct.

The estimated cost of the great vault was £1,200. This (from the accounts) seems to have been greatly exceeded. So far as I can discover, the chapel up to this time appears to have cost £160,000. The stonework was entirely completed by 1515, having been sixty-nine years in building. The famous stalls and organ-case were executed between 1532 and 1536.

Other Buildings of King's College.

The idea of completing the college according to the will of King Henry VI. was never lost sight of, but the want of funds hindered the work, and nothing serious was done till the eighteenth century. However, in the year 1713, the provost, John Adam, set himself to gather funds and rigorously prosecuted the building scheme. He had an interview with Wren at Hawksmoor's house. Hawksmoor appears to have prepared a plan, perhaps under Wren's directions. The following is from a letter of the provost:—

> He (Hawksmoor) showed me ye upright model I did not like ye jetting out of ye pillars of ye portals, nor ye number of them, desired those might be but 4 clapt close on ye building, I think pilasters would still do better. I told him ye height would be majestic of itself, and in its plainness more answerable to ye chapel, and desired all ornaments to be avoided. The most expensive part will be ye Cloister. but it is ye hardest part for Mr. Hawksmoor to part withal.

Adam died in 1719, and this scheme fell through. Work was not started till 1724, when Gibbs superseded Hawksmoor as architect. Gibbs intended to complete the square, of which the chapel already formed one side, by three separate buildings, but the Fellows' building was the only one ever built. It was built of Portland stone at a cost of close on £12,000. The building was ready for the woodwork in 1729, by which time the funds were exhausted. It was two years later before the woodwork was ordered by Gibbs, who undertook to do it "as cheap as the nature of the work will allow." His fees were £300

There is little more to tell of King's College now. In 1822 the college again proceeded with its building scheme. For some reason they did not complete the quadrangle according to Gibbs's design, but held a competition, which was won by Wilkins. This consisted of a Gothic screen to the front of the court and a mass of Gothic buildings to the south. They also proposed to Gothicize Gibbs's building, a most extraordinary and objectionable idea. However, by the time the new buildings were completed the funds had gone down, and Heaven in its mercy thus prevented Gibbs's beautiful building from ruin. This completes the building operations at King's College. Wilkins's addition cost £100,000, so that altogether this College must have cost at least £300,000 during the several centuries of its erection.

Trinity College.

Trinity College was founded by King Henry VIII. in 1546. The site was then covered by two colleges, seven hostels and a number of other properties. It took sixty years to obtain. In acquiring one piece of ground from the Corporation of Cambridge the college had some squabbling with the superiors of St. John's College, as we read in an ancient document "that the Masters and Society of St. John's College do express themselves much grieved and dampnified therewith," and in order to allay their grievance they wanted from the Corporation "One little plot of ground." They do not seem to have got the little plot of ground, however, but at this juncture they very successfully bought from the Corporation their bowling green, so they had no longer reason to feel grieved and dampnified. Another piece of ground was gifted to Trinity by Dame Edith Chambre on the condition that the college would pray for Dame Edith's soul and the soul of her husband and all her relations' souls.

(To be concluded next week.)

Correspondence.

The Competition System.

To the Editor of The Builders' Journal.

Broughton-in-Furness.

Sir,—I have read with great interest your report of the last Architectural Association meeting, and particularly Mr. Bulkeley Creswell's remarks when viewing the competition question from the young architect's point of view. How, if Mr. Creswell's contentions are correct, is a young man just starting practice without influential friends and, very rightly, prohibited by professional etiquette from canvassing for work, ever to obtain a hearing? I am sure that there must be many young architects who will have felt, as I did, on reading Mr. Creswell's paper that if the opinions which he holds became a settled policy, only those persons just entering the profession who were backed up by influential friends could ever hope to be allowed to obtain a hearing; surely a much greater evil than any which the present competition system, faulty as it is, can produce.—Yours truly,

JAMES CROSSLAND.

THE DECORATION OF ST. PAUL'S CATHEDRAL.

Sir William Richmond on his Defence.

SIR WILLIAM RICHMOND, R.A., delivered a lecture last week on "The Decoration of St. Paul's Cathedral" before the members of the Institute of British Decorators. He said that his discourse would partake rather of the nature of a *causerie* than of a lecture. He stood there as a fellow-student who had tackled, no doubt, a very difficult task, and done it to the best of his ability. They all knew how many differences of opinion there must be with regard to matters of taste. Time alone settled the position which any work of art was to achieve and hold. If what he had done in St. Paul's was proved to have been a mistake 100 years hence, all he could say was he hoped they would hack it all out.

Up to the period when what he was inclined to call sham classical became the fashion all over Europe the churches in Great Britain and France and Italy were decorated with colours. It was the introduction of a noble style—the Palladian—which drove colour away. Therefore he was in a sense taken on the hip when he proposed to colour, frankly colour, a Palladian building, and to use colour, he hoped with discretion, but also lavishly. He was told by a great many people that it was an impossible nut to crack, and he said that if it was impossible he would crack it.

They knew that at the time of the Prince of Wales's recovery from his severe illness a sum of money had been collected for the decoration of St. Paul's Cathedral. That sum of money amounted to something like £100,000, out of which about £30,000 was wasted by the authorities in experiments. When he told them that to put up a scaffold underneath the great dome cost between £800 and £1,000 they could imagine that one did not particularly want to make any more expensive experiments with the residue of the money collected.

His views respecting a scheme of decoration for St. Paul's were absolutely decided before he was asked even to consider the decoration of the cathedral, and they were decided in a very curious way. When he was a little boy of about thirteen his mother took him to hear the service at St. Paul's, and they sat in the choir. He looked up at that naked roof—that was before he had ever been in Italy or seen a piece of mosaic—and on going out he said, "Mother, some day I will cover that with mosaic." When he was nineteen he made his first visit to Italy, and said to himself then, hard on forty years ago, "I will now begin to prepare myself for the great task that may some day come to me." He visited, and he had visited since, all the churches covered with mosaic in Italy, many in Asia Minor, and all in Greece; so that in that sense he was prepared, at any rate, to think about the decoration of St. Paul's.

There was a meeting of the Committee, and he made up his mind to two things, which he would stick to absolutely—one was that the work should be carried out by Englishmen, and not Italians; and the other was that he would have nothing to do with that odious modern invention, paper mosaic. All work which was *appliqué* could be done anywhere by one who had perhaps never seen the building in which it was to go. The axiom of all axioms which he would go to the stake for was that all decorative work should be done, if possible, *in situ*; and after the enormous experience that he had had in covering more or less 15,000 sq. ft. of wall he knew that the axiom was worth going to the stake for, because it was absolutely impossible to tell, excepting on the spot, how colours or even forms were going to appear in given circumstances.

He accepted the commission, and said that they must first of all see how he was going to design the choir. He therefore made drawings for the spandrels in water-colour, and took them to the cathedral. His scheme was unanimously passed so far.

Then he said that they must understand one another absolutely in one particular—he was not going to submit his designs to the approval of the British public. He knew the British public, and he knew the British critic. He knew that the British public had not made up its mind in the least degree as to what it liked, and it was for the artists and decorators to make up the minds of the public as to what they were going to have. Also, that the band of gentlemen, admirable writers sometimes, who constituted the critics in the Press had not made up their minds either as to what they liked or did not like. They would find one set praising up one class of work, and another set demonstrating its follies, another set advancing current fashion, current opinions, and another set saying that these were all wrong. He determined that he would not submit his work to penmanship.

THE FELLOWS' BUILDING KING'S COLLEGE, CAMBRIDGE: CENTRE PORTION OF RIVER FRONT.

It was therefore decided that a small committee should sit, and that he should, in a sense, be the chairman of that committee, because he did not intend to alter any design of his own excepting from the point of view of either ecclesiology or archæology. He said, "You must trust me as the artist. I am supposed to know my business. If I make a failure of it, there is always Waterloo Bridge and the Thames." (Sir William Richmond then proceeded to give a detailed account from a technical point of view of his work on the decoration of the cathedral.)

The mosaics were made by Mr. Powell, of Whitefriars, and they are, Sir William thinks, equal in every way to the Greek specimens he brought from Italy. The method of training the executants is interesting. Sir William Richmond built a large studio in his back garden, and between eight in the morning and eight in the evening he trained his nineteen young men and boys—some of them almost novices—to execute some of the mosaic work from his drawings. After four months of toil he produced two large angels. They met with the approval of the committee, who told him to go on. "I executed," he said, "no fewer than 3,500 drawings, and after a couple of years my young fellows worked so dexterously that I can say that I have never seen such fine mosaic work in any country in the world as my Englishmen executed in those four quarter-domes in St. Paul's. We have no business any more to say that Englishmen are not artistic. What we call the lower class of Englishmen are full of taste. They only want good guiding, kindness and gentleness, for they are very sensitive creatures and very shy."

Sir William described his work as building pictures in brick, and then ventured to criticise the huge prophets in the south-east dome of the cathedral. He admitted that they were very fine designs, but he said they ought never to have been executed in mosaic. They ought to have been painted in oil colours. The style, he said, was caught in Italy, where a good many things are caught. The prophets were copied from St. Peter's, Rome. "Severity," he said, "is the mother of mosaic; simplicity its father; and without those two conditions—unless you accept those two conditions—you had better never touch it. I made a great many mistakes, but I never made the mistake of being too severe. I have made the mistake of being too complicated. It is no use to copy Nature. You must have learned Nature, and have Nature at your fingers' end, but you must know that lesson which comes to us late in life—what to leave out."

The necessity of keeping the colours separate and how tints are affected by light were points adverted to. "I started with thirty colours," said Sir William. "I reduced them to fifteen, and finally to five. I got my variety by using the five colours dexterously. In order to produce white I had to use yellow. Had I used white it would have looked sky-blue." Sir William gave several instances of how tints differed owing to the peculiarity of the environment, one being that in order to produce white he had to use blue, red and yellow.

"I am finishing one phase of one aisle," he said, "and it will be opened before very long, and that will give an example of the manner in which I should like some day to treat the two aisles." Finally Sir William ridiculed the contention that "our noble art should stand alone." "It never did," he said with emphasis. "It is a most absurd and ridiculous position to take up. From the first colour was introduced into buildings. The Parthenon was entirely coloured. Every Norman church in England was painted from top to bottom, and at this moment there are over 2,000 churches in this country, notwithstanding the abominable Puritans and Iconoclasts, treated with colour. The time was when England had a greater number of painted churches than France. Until you get architect, sculptor and painter to work again in common, you will never get art in its broad, big, noble sense back into this country. That has been the foundation of all I have done at South Kensington, that the young fellows there shall not limit themselves to one art. Let them learn to execute in concert, and each will learn of the other. That is the way we shall get art back into this country."

EDINBURGH ARCHITECTURAL ASSOCIATION.

At last week's meeting of this Association Mrs. Ramsay Traquair read a paper on the subject of "Decoration." First, with regard to the attitude of the decorator, she said the architect came first, paving the way and creating the decorative artist. It was the architect who must give the favourable soil and atmosphere in which the decorative worker sprung to life. Decoration should become a sort of natural growth, and was only good in its proper place; taken out of that place, it would be a beautiful fragment, but it was only a fragment. She spoke of line as a means towards expression, and pointed out that the Greeks always gave prominence to the angle when they wanted activity, and gave prominence to horizontal and vertical lines when they wanted quietness. The relations between line and colour and the uses of line and colour in decoration were touched upon, and it was pointed out that a flat tint corresponded with a straight line, a graduated tint with a curved line, and broken colour with an angle. She emphasized the importance of the inferior parts of decoration being designed as carefully as the principal parts, and of not being given to inferior hands, otherwise the principal parts were apt to look like pictures in more or less unconnected surroundings.

MANCHESTER SOCIETY OF ARCHITECTS.

The last meeting of the winter session of this Society was held on Thursday evening last. The prizes were distributed by the president, Mr. Alfred Darbyshire, to the students who had been successful in the various competitions of the past year. The names of the winners of the last competitions were announced as follows:—For the design for the cover of the new Sketch-Book, Mr. J. Harold Gibbons. Mr. Holden's prize for a design for a free library, Mr. Harry Moss; the monthly class of design for a market hall, Mr. Harold Hill and Mr. C. H. Potter bracketed equal A paper was then read by Mr. Isaac Taylor on the students' work of the past year. The drawings, about sixty in number, were hung on the walls. Mr. Taylor said the Society gave about £40 a year in prizes to be spent in books, so that, besides the useful training, here was an excellent opportunity of establishing a first-class library. A further prize of £5 5s was this year offered by Mr. J. W. Beaumont for sketches and measured drawings suitable for publication in the Sketch-Book. Turning to the sketches exhibited, Mr. Taylor, whilst realizing the value of artistic sketching, thought that an architect's sketch-book should have far more outline diagrams, with sketches to large scale, of details and mouldings. There should be less of the photograph-like general views that students were so fond of making. The importance of measured work was also insisted on. The lecturer then gave a short criticism on each of the drawings. Mr. J. W. Beaumont, in proposing a vote of thanks, spoke of his great interest in the forthcoming issue of the Sketch-Book, and pointed out that it rested with the students to make it successful. Mr. H. B. Laycock thought that some of the conditions for the competitions should be more explicit, instancing the cottage hospital, where it was not stated whether day-rooms, operating rooms or accident ward were to be provided. Mr. Salomons also spoke and the lecturer briefly responded.

A Clock Tower at Torquay has been erected as a memorial of the late Squire Mallock, one of Torquay's benefactors. It takes the form of an Eleanor Cross, and was designed by Mr. John Donkin, F.R.I.B.A., of Albert Buildings, Queen Victoria Street, E.C., and Old Christchurch Road, Bournemouth. The carving was executed by Messrs. Harry Hems & Sons, of Exeter. The general contractors were Messrs. Bovey & Son, of Torquay.

GATEWAY ST. CATHERINE'S COLLEGE CAMBRIDGE.

Construction Notes.

Fixing Tiles. The general custom nowadays seems to be to use copper nails for fixing tiles or stone slates, that is, in work where some little pretension is made to doing the thing well. Of course a speculative builder uses the cheapest thing he can get hold of so long as it lasts long enough for him to sell the house, and he may use iron nails unprotected or perhaps coated with tar. If he adopts galvanized iron nails he no doubt considers he is doing the thing handsomely. But let the conscientious architect avoid being misled into using them by the persuasive builder. Zinc or composition nails are better—but not good enough. Wooden pegs seem to have gone out, but they were fully as good as iron nails. In some ancient buildings the tiles were fixed with splinters of bone, and excellent they were for the purpose. And now another instance has recently been offered by a writer in the daily press of an old building at Mansfield which was a good many years ago roofed with stone slates fastened with hundreds of the prongs or tynes of the antlers of deer. They were pegged into holes pierced in the slabs—two to each slate—in the ordinary way. Their use was evidently traceable to the ancient builder's desire for quaintness. It is these little tricks and fancies of the old workmen which more often than not give the quaintness and charm to old country houses so much admired by all our architectural students. All the striving after effect so characteristic of to-day does not make up for the interest we derive from the evidences of the loving hand and thoughtfulness and resource of the craftsmen of old.

Exhibit of Irish Minerals and Building Stones. The Department of Agriculture and Technical Instruction for Ireland have placed on view for a period of three months at the Imperial Institute, London, the extensive collection of Irish minerals and building stones which formed one of the most interesting and valuable of their exhibits at the recent exhibition in Cork. The exhibit embraces samples of the varied and excellent building materials and marbles in which Ireland is particularly rich, and the opportunity of examining these samples will be of the utmost advantage to all engaged in the building trade. The beauty and excellence of the Irish granites, sandstones and limestones, as well as of the red, green and black marble and the other ornamental stones of the country, are well known, and when shown at the Department's exhibit at Cork excited the admiration of all who saw them. The exhibit also includes specimens of clays, cement-making materials and fine sands. In the mineral section of the exhibit are a series of prospectors' samples of the metalliferous deposits of the country and samples of Irish coal and other minerals now being worked. The mineral expert to the Department will remain with the exhibit during the period mentioned, and all enquiries should be addressed to Mr. E. St. John Lyburn, F.G.S., Irish Mineral Section, Imperial Institute, London, S.W. The collection is a very large one, and shows that Ireland is exceedingly rich in building materials which have an individual character unlike any others. There are several reasons which, combined, have prevented them being worked to any advantage and used largely in England, or even in Ireland itself. First and foremost of these reasons may be placed that of insufficient capital to work them cheaply and on a big scale and push them; secondly, insufficient or no means of transport; and, thirdly, may be placed ignorance on the part of the building trade of the variety and excellence of the materials and

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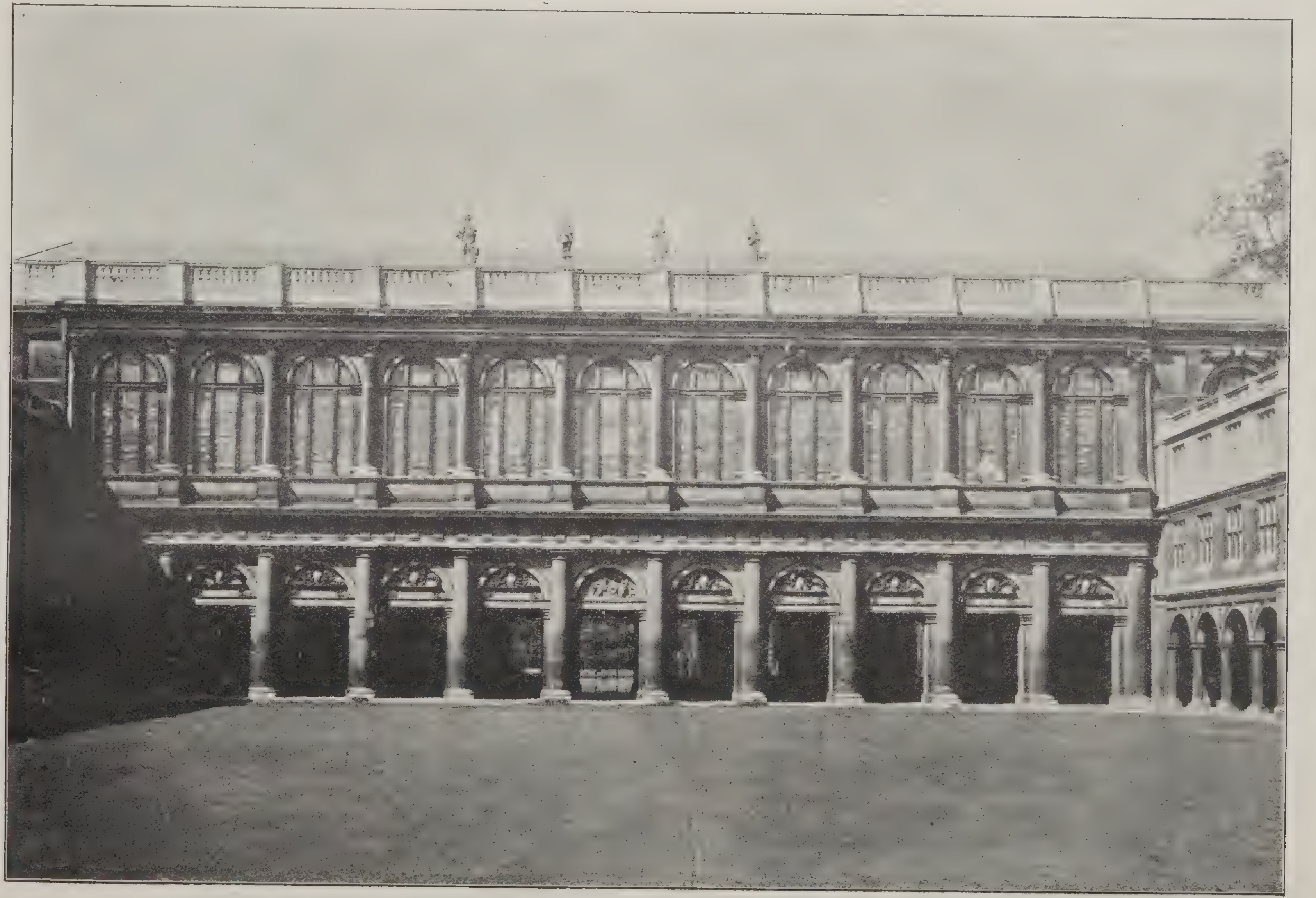

TRINITY COLLEGE LIBRARY, CAMBRIDGE: FRONT TO QUADRANGLE. SIR CHRISTOPHER WREN, ARCHITECT.

(In illustration of the Article on "Some Cambridge Colleges.")

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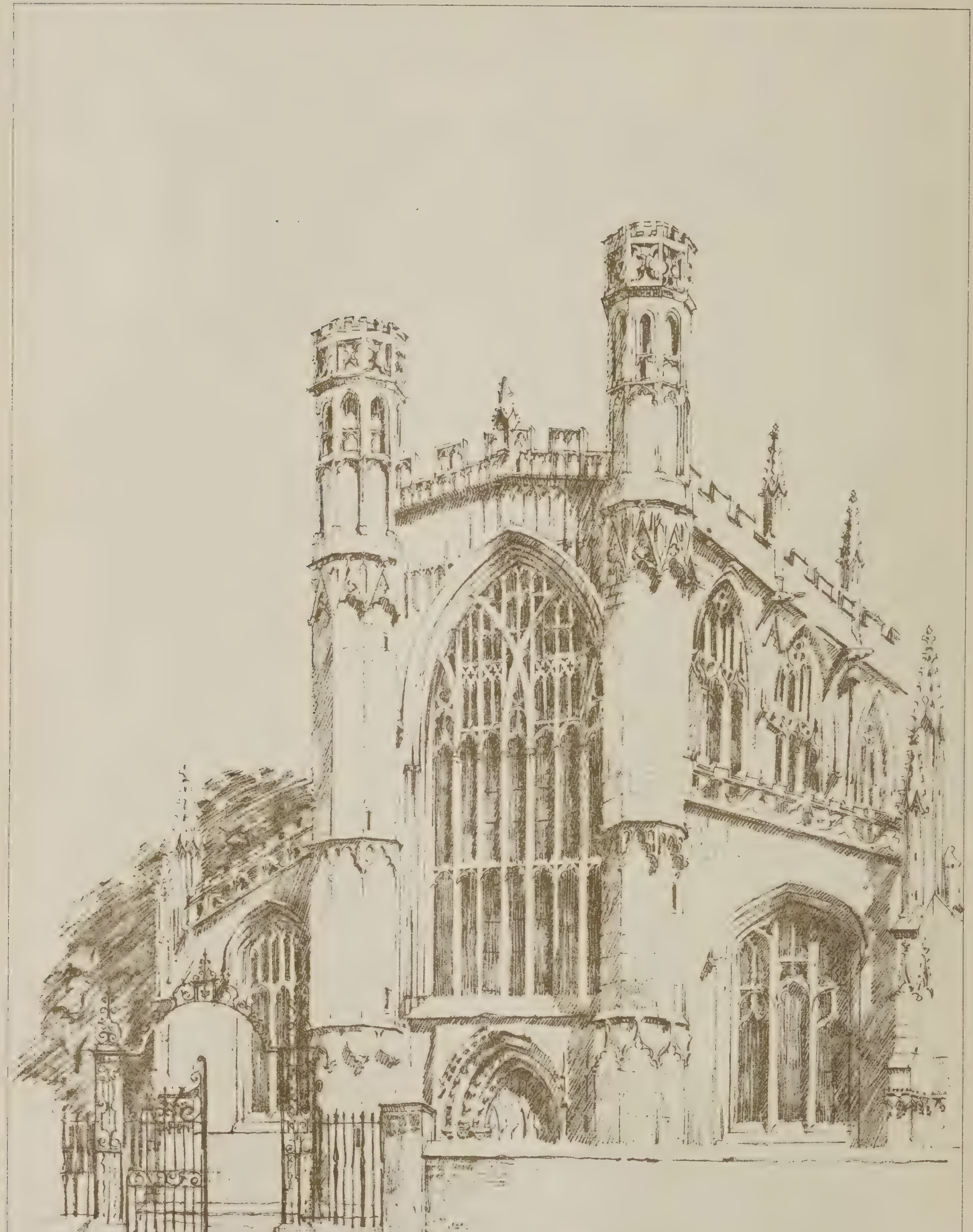

ST. MARY'S CHURCH, BEVERLEY: WEST FRONT. DRAWN BY JOHN MANUEL.

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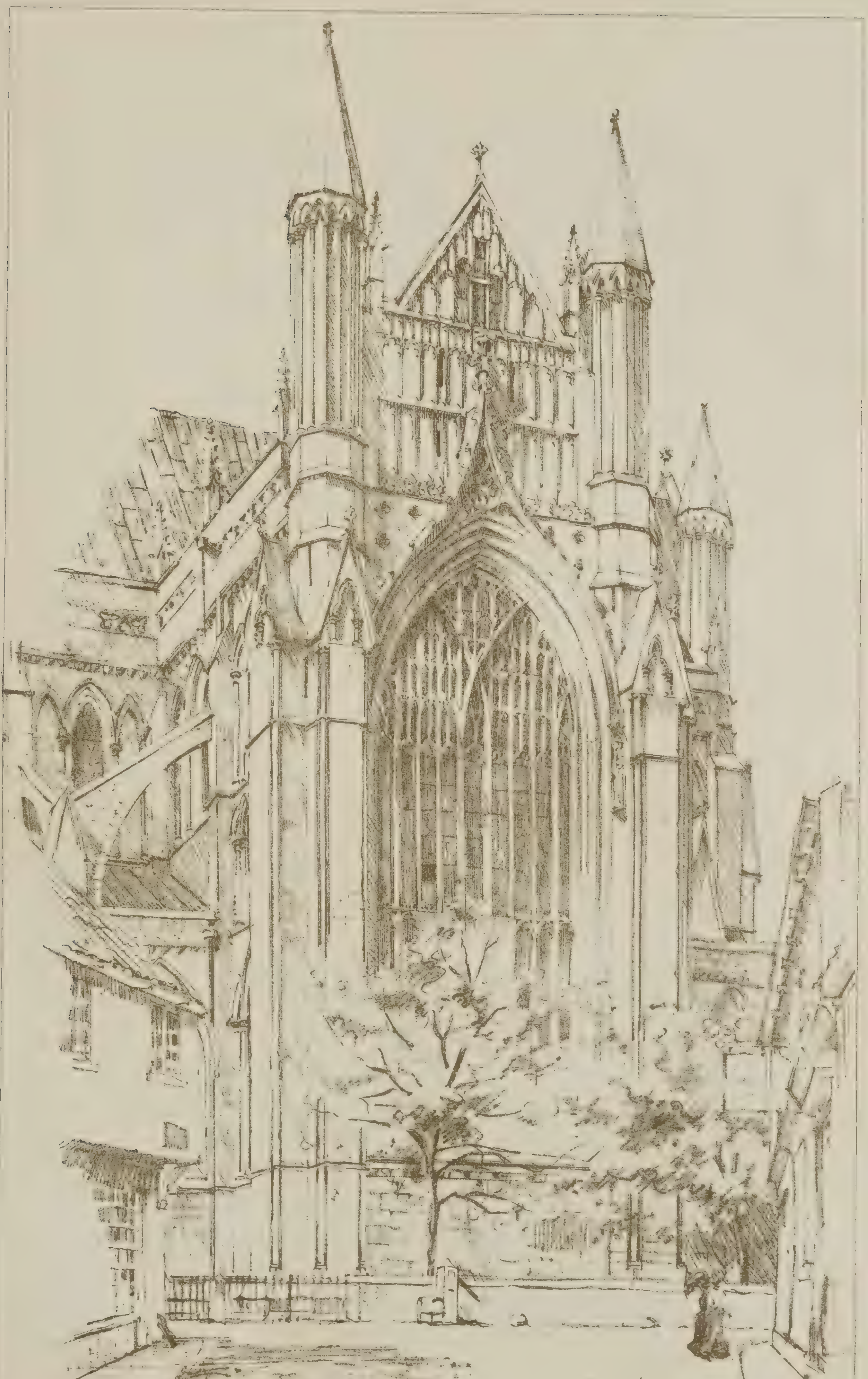

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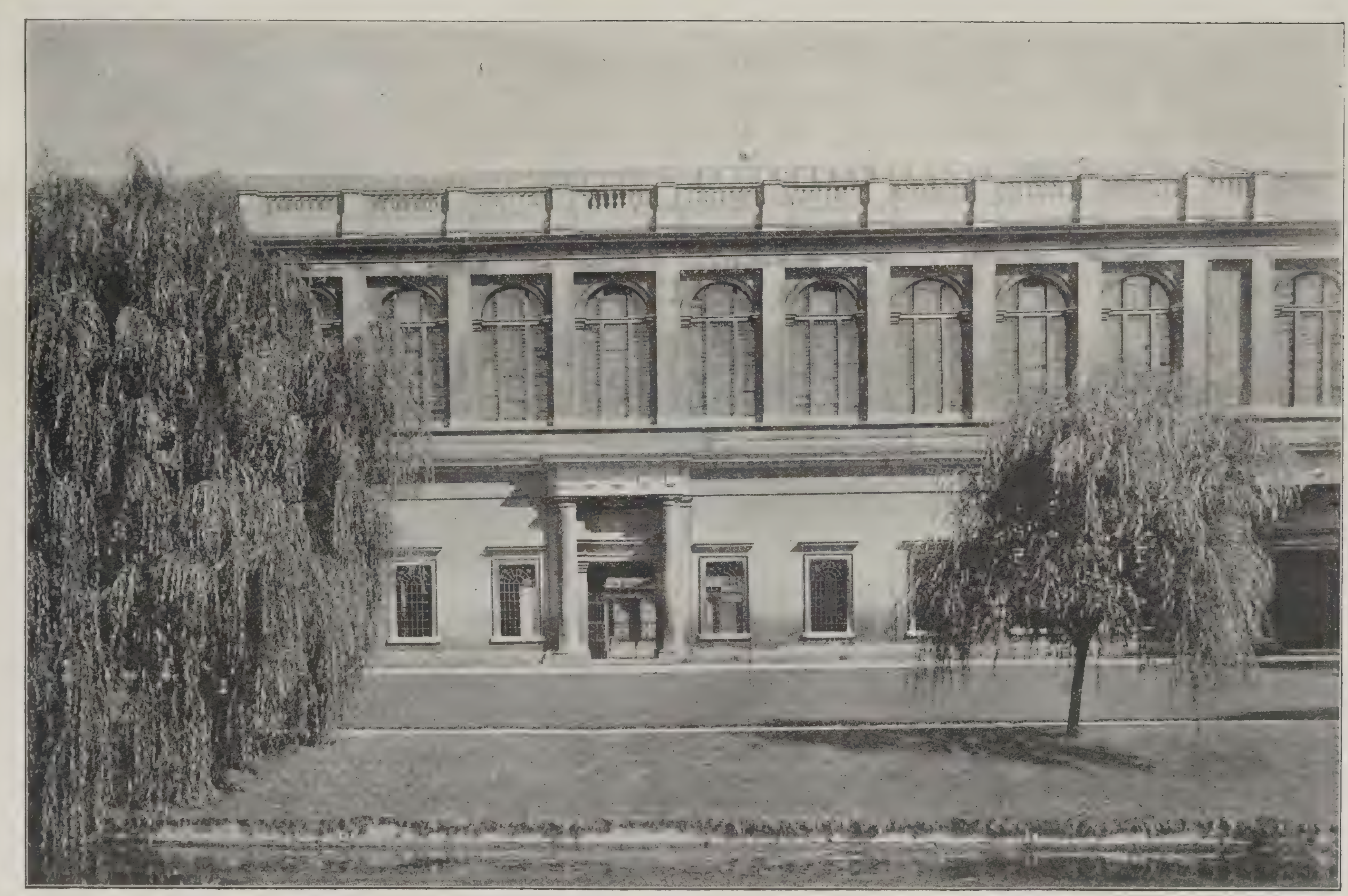

TRINITY COLLEGE LIBRARY CAMBRIDGE: RIVER FRONT. SIR CHRISTOPHER WREN ARCHITECT.

(In illustration of the Article on "Some Cambridge Colleges.")

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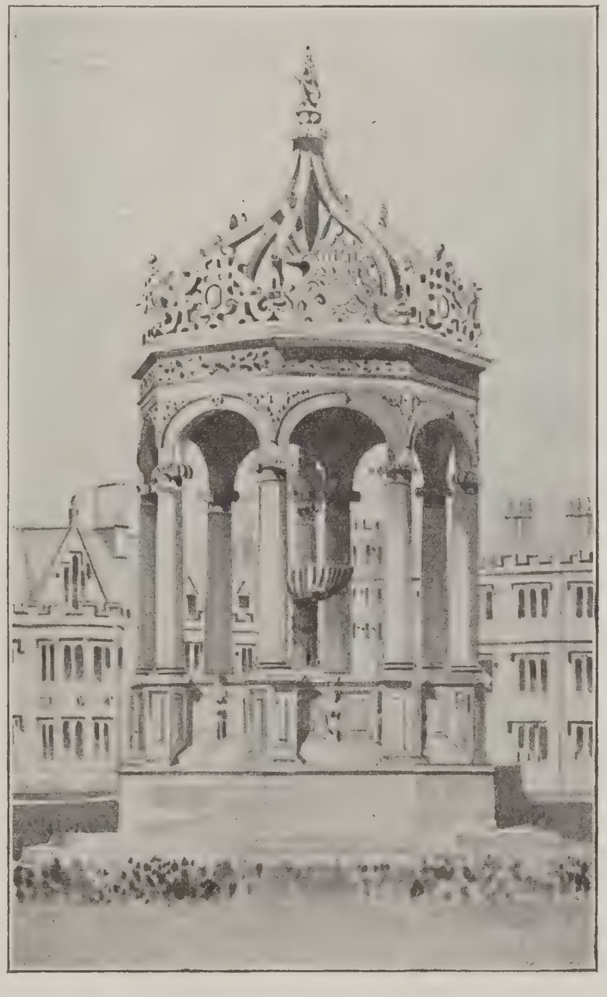
of the firms who supply them. This exhibition affords an opportunity for remedying n some part the latter, and may serve to attract some of the much-needed capital into these Irish industries. The apathy of the Irish themselves is really remarkable—there are mines having very large seams of excelent coal that are worked in a small local way, but simply for the reason that the railway is about six miles off they cannot be obtained at any distance profitably. If they could, as they should, the large deposits of ron and copper ore could be worked on a arge scale, and a tide of commercial prosperity set in for that unfortunate country. What is needed is a number of light railways o the main lines. This want of transport applies still more strongly to quarries. There are immense quantities of granite of all kinds —some that cannot be beaten by any in Scotland—unworked, notwithstanding the cheapness of labour, simply because there are no means of transport, whereas sufficient granite cannot be supplied from Scotand and Guernsey, and we actually are supplied with large quantities from Norway for such ordinary purposes as road-making. The same thing is noiceable in quarrying—the old hand methods are still followed, very little machinery (and that only in the largest quarries) being used. This, of course, s partially due to want of capital, but part is due to conservatism. The Irish marbles have been used in this country o some extent—the famous Connemara green being the best known—but ignorance of their wonderful variety has prevented their being used o anything like the extent they ought o be. Many foreign varieties are imported into this country from France, Norway and Italy that are far nferior to similar Irish varieties—ndeed, several of the famous ancient marbles of Italy are excelled in figure and colour by the same Irish varieties. There is an immense block of green Connemara marble from the Dublin museum shown at the exhibition which s most glorious in colour and marking. From the same quarries of the Irish Marble Company (Richard Colles) at Kilkenny as the green comes from are upplied beautiful black, red and white marbles. Another exhibit that takes almost equal rank is that of Lord Midleton, of the Midleton Red Marble. There are numerous samples at the exhibition of limestone of a peculiar latey, grey-black colour that seems to be prevalent in the country. The Ballinasloe limestone exhibited by Mr. P. Sheridan, of 23, Westland Row, Dublin, is grey-black and takes a polish well. Mr. Quinn, of Mount Charles, co. Donegal, shows a sample of a very fine cream sandstone, even in exture, which carves admirably and weathers very well, that has been partly used in extensions to the Dublin Museum. Numerous examples of slates are hown, but they by no means exhibit the wealth of the country in this respect. Probably the best slate in Ireland is the dark-grey from the Ormonde Slate Quarries, Carrick-on-Suir, co. Waterford, which is every bit as good as any of the Welsh. The Victoria Slate Co., at the same place, supply a blue and a pale-green slate that are very pleasing, and the Madranna Slate Quarry Co., Leap, co. Cork, supply a peculiar shiny dark black slate that cleaves in thin plates, and gives pleasing results if judiciously used. The exhibition is open free to the public between the hours of eleven and five. Admission is by the east public entrance of he Imperial Institute. The collection is, unfortunately, placed in a gallery where it is badly lighted. H. K. D.

Bricks and Mortar.

Aphorism for the Week.

Taste is only to be educated by contemplation, not of the tolerably good, but of the truly excellent.—GOETHE.

Our Plates. TRINITY COLLEGE LIBRARY, Cambridge, is dealt with in the concluding part of the article on "Some Cambridge Colleges," which will be published in our next issue.—St. Mary's Church, Beverley, was originally a chapel attached to one of the altars in the Minster and exhibits peculiar alterations and enlargements which have changed it from a twelfth-century church into what appears at first sight to be a great fifteenth-century parish church. The Minster, on the other hand, as Mr. John Bilson, F.S.A., observes in his article in THE ARCHITECTURAL REVIEW for April, 1898, may be said to be the result of two great building efforts—the first including the whole eastern arm and transepts (a new design on a grand scale practically uninfluenced by any previous buildings), and the second the completion of this design after a considerable interval. The great east window of the Minster was inserted in 1416, and contains the only mediæval glass which has survived in the fabric: parts of the lower lights are thirteenth-century work and parts of the following century, but almost all the upper part of the window is glazed with the original fifteenth-century glass.

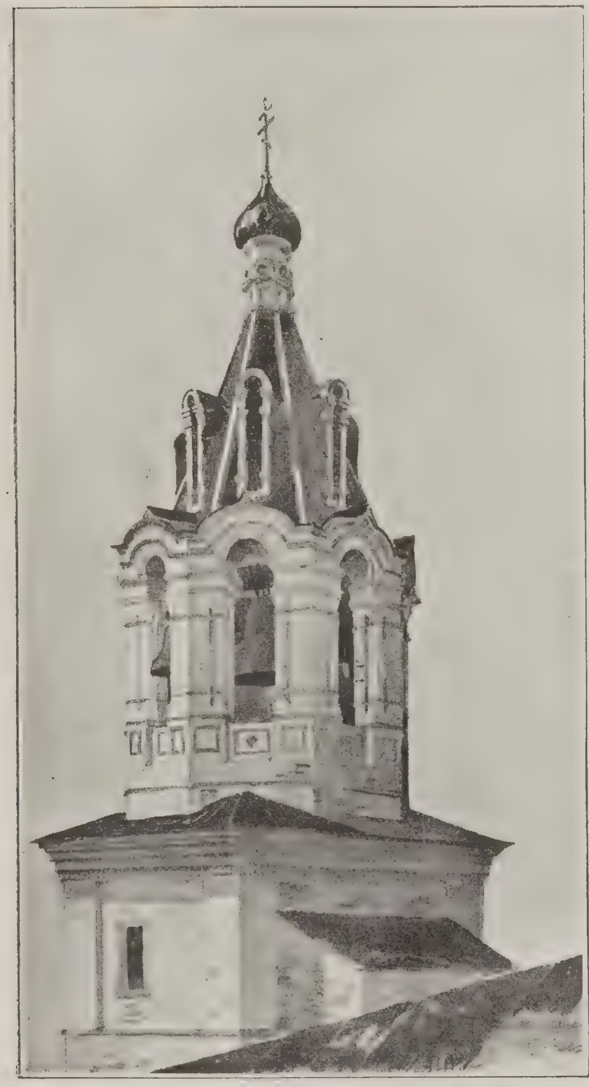


THE FOUNTAIN, TRINITY COLLEGE, CAMBRIDGE. (ERECTED 1602, REBUILT 1716.) DRAWN BY J. MYRTLE SMITH.

London's Supply of Water. THERE evidently is a copious supply of water for London in sources which are not as yet used or explored. Messrs. C. Isler & Co., artesian engineers, Bear Lane, Southwark Street, have tapped a copious supply of water at Messrs. C. Hammerton & Co.'s Brewery, Stockwell, where an artesian bored tube well, 11½in. in diameter, 400ft. deep, has just been completed by them through varying strata. The result which has been obtained is all the more remarkable considering that expert opinion seems to incline to the belief that the water-level in the London basin is lowering to such an extent that in a few years the water from the chalk stratum will be exhausted. Such, however, is not likely to be the case. The supply from this artesian bored tube well is raised by means of an improved system of compressed air, which dispenses with all pumping machinery, and the minimum yield is 320,000 gals. per day. The water-level remains the same when pumping as before pumping, showing clearly that strong underground springs exist in this part of London.

Proposed Restoration of Culross Abbey. ALL that remains of the ancient Abbey of Culross, which it is now proposed to restore, is the choir and the central tower and some fragments of aisles and chapels. The choir is occupied as the parish church, and entrance is obtained through the tower. The old cloister court in which the monks were put to flight by the Reformers is occupied as a garden, but visitors find much that is interesting in the ruined walls. The groined roof and arches of the great hall always command attention, and in the vaulted passage which leads through a Norman doorway are fine examples of the architecture of the flourishing days of Scottish monasteries. The old choir of the abbey, as Mr. David Beveridge, the author of "Culross and Tilliallan," rightly puts it, has been so "much metamorphosed in the course of the alterations which at different times it has undergone" since it became the parish church, that it is difficult to understand the original construction of the building. A magnificent specimen of an Early English window is obscured by a gallery and a staircase. It is proposed to remove the south and the east galleries, and to provide sittings for the accommodation which would be lost by the opening up of the arches, and the re-erection of the aisles on the south and the north aisles. "The Glasgow Herald" says that repairs involving a cost of £2,000 are absolutely necessary if the building is to be kept in a half-decent state of repair, and the heritors have pluckily come forward and guaranteed this amount. Sir Rowand Anderson estimates that the carrying out of his entire scheme would involve an expenditure of £5,000, so that £3,000 will need to be made up by subscription. The sum of £3,000 is too big an expenditure for the people of Culross, who are not heritors, and this accounts for an appeal being made to the people of Scotland, and especially to the city of Glasgow. Sir Rowand Anderson proposes to purge the building of its internal architectural vagaries. The work can only be done if help comes from without.

Mr. Bodley and Peckitt's Glass at Exeter. IN reference to the proposal to remove Peckitt's glass at Exeter Cathedral and to replace it with other glass as a memorial to the late Archbishop, Mr. G. F. Bodley writes to the "Times" as follows:—As architectural adviser at the cathedral of Exeter I have been asked to answer the objections raised against the removal of the glass now in the west window. . . . I feel sure that it cannot be generally known what a disfigurement the glass is to the beautiful interior of the cathedral. Painted at a time when glass-painting was a dead art, this window is entirely worthless. In colour it is most inartistic, and in drawing it is beneath criticism. Indeed it is utterly without merit. The glass, so cruelly crude and harmful to the beauty of the building, seems to pervade the whole interior, to its great detriment. It has not age to make it venerable, and certainly not any art to make it desirable that it should be retained. It is the work of Peckitt, a glazier who patched the old glass at York Minster. His work there, too, is most objectionable. The glass in the rose window and the lancets of the south transept in Westminster Abbey has recently been removed and new has taken its place. But the glass here was not so bad as this window at Exeter. It is true that the glass may mark a period of bad art, but that is hardly a sufficient reason for letting it remain when an opportunity offers for filling the window with better work, more worthy of the cathedral.



A MOSCOW BELFRY. DRAWN BY PERCY E. NOBBS. M.A., A.R.I.B.A.

A Moscow Belfry. The small belfry illustrated on this page from a coloured drawing by Mr. Percy E. Nobbs, M.A., A.R.I.B.A., is opposite the general post-office at Moscow, and dates from the end of the seventeenth century. The roof is of sheet copper surmounted by a gilded one. The brickwork is plastered and white-washed, the projecting string-courses being tinted grey.

GREAT THEBES.

Discovery of a New Royal Tomb.

In the "Times" last week the discovery was announced of the tomb of one of the Pharaohs of the eighteenth Dynasty, Thothmes IV. For the last two years Mr. Theodore M. Davies, an American, has been excavating steadily and systematically in the Valley of the Tombs of the Kings at Thebes, clearing the rubbish away inch by inch, and so laying bare the bed-rock. He has been rewarded this spring by the discovery of a previously unknown royal tomb. The actual discovery was made by Mr. Howard Carter, the Inspector of the Monuments of Upper Egypt, who has been conducting the excavations for Mr. Davies, and it is to his care and practised skill that we owe not only the preservation of all the objects found in the tomb, but also a scientific record of the conditions under which they were discovered. The tomb itself, like the other royal tombs in the same valley, consists of a gallery cut into the heart of the mountain. After sloping downward for a considerable distance, it is interrupted by a deep square well, on one of the walls of which is a band of paintings. On the further side of the well the passage turns back upon itself, and finally opens into a large chamber, at the extreme end of which is a magnificent sarcophagus of granite covered with texts from the Book of the Dead. On either side are smaller chambers. Clay seals with the name of the king had been attached to the doors of the chambers, and it is interesting to observe that the Egyptians of the eighteenth Dynasty had already to some extent anticipated the invention of printing, the raised portions of the seals having been smeared with blue ink before being impressed upon the clay. The walls of a chamber which served as a vestibule to that in which the sarcophagus was laid are adorned with a few paintings, and on one of them is a hieratic inscription, dated in the eighth year of Hor-em-heb, and stating that the tomb had been plundered by robbers, but restored as far as possible by that Pharaoh. The great and unique find, however, has been that of the actual chariot which was made for the Pharaoh, and in which he rode at Thebes. The body of it alone is preserved, but in a perfect condition. The wooden frame was first covered with *papier-mâché* made from papyrus, and this again with stucco, which has been carved, both inside and out, into scenes from the battles fought by the Pharaoh in Syria. The art is of a very high order, every detail being exquisitely finished and the faces of the Syrians being clearly portraits taken from captives at Thebes. The chariot is, in fact, one of the finest specimens of art that have come down to us from antiquity, and that it should have been made for the grandfather of "the heretic king" lends to it additional interest. Along with the chariot was found the leather gauntlet with which the king protected his hand and wrist when using the bow or reins.

Builders' Notes.

Mr. A. K. T. Buckley, of the firm of Buckley & Bowden, Durban and Johannesburg, builders' merchants and agents for building specialities, is at present in London looking for fresh agencies in the building trade, and is residing at 25, Maddox Street, W.

Concrete Floors.—The tender of the Columbian Fireproofing Co., Ltd., 37, King William Street, E.C., for concrete fireproof floors, roofs, coal bunkers, &c., at the electricity generating station at Ipswich has been accepted by the Ipswich Corporation, and the work has been commenced. The architect is Mr. C. Stanley Peach, F.R.I.B.A. We understand the steel works of this company at St. John's Wood are now rapidly approaching completion.

The L.C.C. Works Department and its Estimates.—In the course of his recent speech at a London Chamber of Commerce dinner Lord Avebury, referring to the Works Department of the London County Council, said: "We sometimes see it stated that works have been carried out below the estimate, and it is implied that there has been a saving. But who makes the estimates? If you put your own estimates high enough it is easy to do the work for less. Let me give you a case in point. The following letter is from Mr. R. Clutton, the great land agent: 'Dear Lord Avebury,—Referring to our conversation the other day, the facts as to the estimate given by the Works Department of the L.C.C. for constructing vaults at Knightsbridge in connection with the widening there are as follows:—The estimate of the Works Department for the brickwork for these vaults was £28 per rod (on cement). The Office of Works jobbing contract for the same description of work, whether in the basement or on the top of a high building, is £19 2s. per rod. This, in my opinion, would make £18 per rod, a very good price for vaults, but even taking the £19 2s. as a basis the difference is quite absurd.'"

Proposed Reductions of Wages in the North.—We learn that the Tyne bricklayers' labourers and other labourers employed in the building trade—with the exception of those engaged in plastering work—have received notice from the master-builders of a reduction in their wages of ½d. per hour, to take effect on September 1st. The present rate of pay is 6½d. per hour. The Tyne bricklayers, joiners and masons have received notice of a proposed reduction of 1d. per hour in their wages. In each case the present wage is 10d. per hour. In the cases of the bricklayers and the masons the reductions are to come into force on September 1st. In the case of the joiners, June 1st is the date fixed. The employers further require a number of alterations in the rules under which these trades work. They desire that all future notices of reductions, &c., should terminate either on May 1st or November 1st. The present rules are so worded that notices may terminate between April 1st and September 1st. As to the masons engaged in stonework—"banker work"—the masters desire that their working day should be extended from eight to nine hours. With regard to overtime, the employers desire for all classes affected by the proposed reductions and alterations that overtime should be paid time and a quarter for the first four hours, instead of time and a quarter for the first two hours and time and a half thereafter, as at present. Similar notices have been served on all the operatives in Middlesbrough, the Hartlepools, and the Tees. Some of the trades affected are giving notice of a counter-claim for an increase in wages to come into operation on September 1st.

R.I.B.A.

Mr. HADFIELD ON WESTMINSTER CATHEDRAL.

A MEETING of the Royal Institute of British Architects was held at 9, Conduit Street, W., on Monday evening last, the chair being occupied by the president, Mr. Aston Webb, A.R.A. The secretary read a letter from Sir Dighton Probyn intimating the King's approval of Mr. McKim as the recipient of the Royal Gold Medal. The president next referred with deep regret to the death of Prof. T. Roger Smith, and a letter of condolence with his widow and family was moved to be written.

Mr. Charles Hadfield then read his paper on Westminster Cathedral.

In some preliminary remarks Mr. Hadfield stated that the idea of erecting a cathedral for the Roman see of Westminster originated with Cardinal Wiseman a few months before his death in February, 1865. The project was taken earnestly in hand by his successor, Cardinal Manning, and in 1884 the present cathedral site, consisting of about four acres, upon a portion of which had previously stood the Tothill Fields Prison, was acquired for a sum of £55,000. Cardinal Manning died in January, 1892, leaving the task of raising the edifice to his successor, Cardinal Vaughan.

The idea of erecting a great Basilican church, an attempt to reproduce old St. Peter's, was abandoned as impracticable; and with it the competitive system of getting a design. In July, 1894, Mr. J. F. Bentley, who had expressly declined to take part in any competition for the building, was asked to undertake the designing of the cathedral, and consented. Prior to beginning the work he spent some time in Rome, and visited St. Mark's, Venice, and the group of churches on the Adriatic coast which had been influenced by the Sta. Sophia tradition. He admitted that the buildings at Ravenna first enabled him to decide on the forms and treatment of what had been in his mind. On returning to London in March, 1895, he rapidly prepared the plan, with an internal area of some 54,848 sq. ft., of a great Byzantine cathedral which, with the general lines of the design, had been long maturing in his mind. Later a model was prepared, one forty-eighth the actual size, executed in Kauri pine. The foundation-stone—a block of Cornish granite 5ft. by 3ft. and 2ft. 8in. thick—was laid on June 29th, 1895. The Byzantine, instead of the Gothic style, had been decided on after much deliberation. The question of cost weighed heavily against a Gothic design. With modern appliances a Byzantine cathedral of brick would be erected within three or four years with the means at command, leaving the marble and mosaic decorations to be added as time went on and the necessary funds were available. Bentley himself fully concurred in the decision. "I am not attempting a new style," he said, "that is impossible; but intend, as far as I am able, to develop the first phase of Christian architecture." His plan of the cathedral, Bentley explained, was not that of the Eastern church of the Justinian period, but an example of what might have been unfolded had not the decadence of the Roman Empire terminated the growth of congregational requirements in the East. The plans of St. Sergius and St. Bacchus, Constantinople, or of St. Vitale at Ravenna, both of about the same age, it was evident were arranged from a liturgical rather than a congregational standard, while the church of St. Mark, Venice, erected nearly four centuries later, indicates a marked advance in the latter direction, showing clearly the course the development was taking.

The church is not orientated, the axis of the choir being turned to the south-south east. This was demanded by the exigencies of site and surroundings, and by considerations of cost, lighting, &c. It was, moreover, in accordance with Roman precedent, where churches had to follow the lines of existing streets and ways. An important factor in deciding the levels and lie of the foundations, crypt, &c., was the existence of a platform of concrete 9ft. thick, the foundations of the old prison, which underlies a portion of the site in a diagonal line drawn from the north jamb of the great entrance portal to the south pier of the sanctuary arch.

Externally the cathedral has an extreme length of 360ft. and a width of 156ft., the height of the nave being 117ft.; height of the façade (not including the turrets), 99ft.; height of the campanile, 284ft. Internally the dimensions are:—From the main entrance to the sanctuary, 232ft.; depth of the sanctuary, 65ft.; and of the raised choir beyond, 45ft., making a total internal length of 342ft.; width of nave, 60ft.; width across the nave and aisles, 98ft.; and across the nave, aisles, and side chapels, 148ft.; height of the main arches of the nave, 90ft.; and to the crown of the dome, 112ft.

The architect's leading constructive idea has resulted in a great building of brickwork, set in cement-mortar, covered by homogeneous concrete domes, vaults, and flats, &c., without recourse to the use of steel or ironwork, and with a sparing use of oak timber in the roofs of the apsidal choir and the transepts, and of teak in the upper stage of the campanile, with a provision for the gradual completion of the interior by lining it with marble up to a height of 40ft., and above that with decoration of mosaic work.

Mr. Hadfield gave details of the materials used, and particulars of the exhaustive series of tests to which samples of bricks and concrete were subjected by the architect prior to their selection in bulk for the work. The cement selected was "the best Goliath brand," and ground so fine that the residue on a sieve of 5,800 meshes to the sq. in. would not exceed 10 per cent. The brickwork of the footings was double the width of the walls above, the concrete below extending from 1ft. to 2ft. outside. Faversham stocks were used for the lining of the interior behind the future marble and mosaic work; thin Bracknell red-facings (under 2in. thick) for the exterior, Fletton wire-cut bricks for the large piers and the walls, Poole wire-cut bricks for the smaller piers, and hard vitrified blue Staffordshire bricks for the outside facing of the underground vaults and sacristy, and for the damp-courses, set in nearly neat cement. No machine bricks have been used. English bond was adopted generally, the outer facing excepted. For internal facing, stock bricks were used, being best adapted for adherence when coated with the bedding for decorative work. Portland stone from the Brown bed was selected for the external dressings; and a high plinth of fine-axed Penrhyn granite, in courses, set with a bold open joint, was placed at the ground level to resist the injury from traffic. Granite has been used for doorways and elsewhere with the same intent.

As regards the domical construction, the architect's idea had been at first to save much centering by using cast segments of a sphere and building them up into domes; but he afterwards abandoned this method for that of a homogeneous mass of concrete thrown on to a centering. The sanctuary dome alone is pierced, and there are twelve windows encircling it, with an ingenious system of counterforts flanking each opening.

The marble monolithic columns are an important portion of the general scheme of colour-decoration in the cathedral. Great care, skilful research, and a large outlay have been incurred in procuring them. They have been presented by many benefactors. In St. Peter's crypt round the apex below the retro-choir they are of red Norwegian granite, with varied capitals of Hopton Wood marble and Derbyshire marble bases.

The columns on either hand of the nave, twenty-nine in number, are of *verde antico* from the classical quarries lately reopened at Larissa in Thessaly; Greek cippolino from the island of Eubœa; Swiss cippolino from Saillon in the Rhône valley, Languedoc; Italian breccia from Seravazza; grey granite from Norway; and the red granite which is not unlike ancient porphyry. These shafts, 13ft. long, each stand on a moulded base of Norwegian granite. The columns dividing the aisles of the Blessed Sacrament and Lady-Chapels from the sanctuary are of jasper and red Norwegian marble of lovely colour and figure. There are fourteen columns of pavonazzo in the sanctuary galleries.

The columns have delicately sculptured statuary capitals of Carrara marble, each varying in design, and were fixed in position after the main arches carrying the domes were completed and the superincumbent weight had taken its proper bearings. The baldachino above the High Altar, on the design of which Bentley bestowed much care, will be constructed of statuary inlaid with mosaic; and it will be supported by eight superb monoliths of onyx, 15ft. in length, procured from Africa after long search and enquiry.

Cast lead is used throughout, and the roofing and ridges are wrought with welted rolls, while the finials have the individuality inseparable from Bentley's work. The windows are glazed with roundels and white translucent glass, with strong pattern leading. The steps of the circular newel staircases which give access to the crypt, galleries, and roofs are made of hard artificial stone composed of Portland cement and crushed granite. The outer covering slabs of the domes are of the same material. The flats and gutters about the domes and roofs are laid with asphalt. In the large windows Doulton terra-cotta tracery, or lattices, of a varied and piquant design have been made use of.

The heating is by hot air on Haden's system, to be supplemented by low-pressure steam-pipes in the galleries. Two spacious heating chambers are provided in the basements of the Blessed Sacrament Chapel and of the baptistery.

In treating of the design of the interior and exterior the author called special attention to the arrangement of the nave arcading—a favourite feature with Bentley, consisting of the continuous treatment of the arcading along the full length of the nave to the sanctuary arch, without ignoring the crux arrangement of the transepts, which are thereby invested with increase of interest and mystery. This contributes to the perspective and proportion of the interior in a marked degree. The architect has also scored a success in the lighting. The tympanum of each of the main arches is pierced by a semicircular lunette of 25ft. diameter, filled with delicate tracery, and below, between well-defined pilasters, a pair of windows is devised. The lighting is further happily emphasized by the twelve windows round the sanctuary dome. The perspective of the interior has obviously been focussed on the High Altar and its covering, the baldachino, the supreme spot of sacrificial interest. Each bay of the nave holds in its lateral face the mystical number of seven arches, four on the ground level carrying the galleries, each 12ft. span, two secondary arches of 25ft. span, and the great archivolt "embracing and unifying the whole system."

The principal or western entrance from the exterior flanked by the campanile, a composition extending 65ft. and embracing in

(*Continued on* p. 74.)

Law Cases.

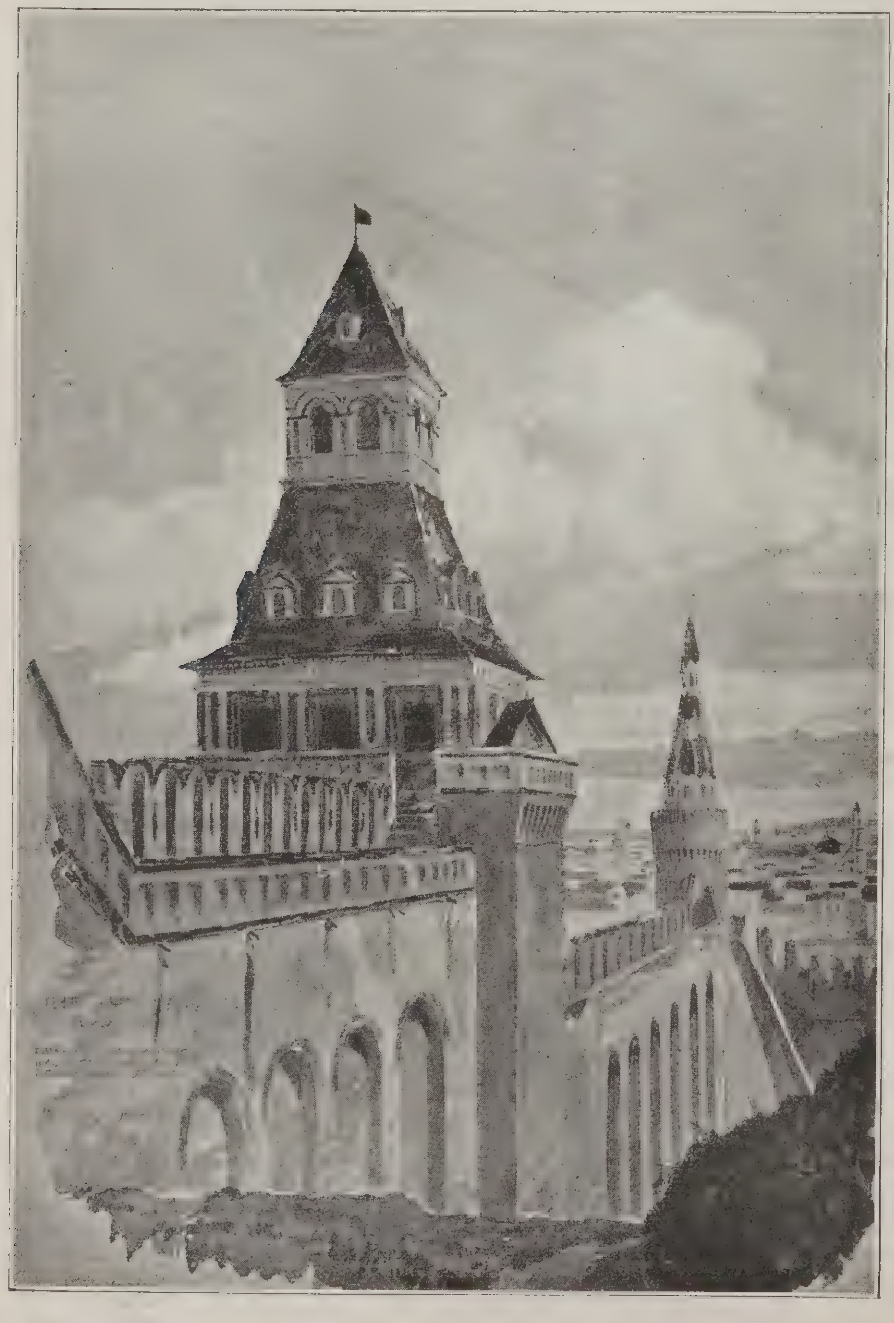
New Districts and Intercepting Sewers: Important Appeal Case.—The case of *The Corporation of Hove* v. *The Brighton Intercepting and Outfall Sewers Board* came before the Court of Appeal on March 9th. The Master of the Rolls said the question raised was whether the District of Hove was entitled to pass its sewage into the intercepting sewers which had been carried along the sea-front of Brighton and the adjacent districts. That right was contested by the Brighton Intercepting Sewers Board, which said that the intercepting sewers were intended for certain wholly different districts. His Lordship thought there was no difficulty in coming to the conclusion that the Sewers Act of 1870 contemplated that which had in fact been done—that is, the formation of an enlarged district. In his opinion the case came exactly within section 91 of the Act, and the plaintiffs were the proper parties to put in motion the machinery of that Act. The judgment of Mr. Justice Kekewich therefore could not be supported, and the appeal must be allowed.—Lord Justice Romer was of the same opinion. Having regard to the Act of 1870, it was clear that any local authority within the definition of that Act had full power to drain all the sewage in its district into the intercepting sewers. In section 91 it was clearly provided that, with regard to what he might call the new drainage authorities coming into existence after the passing of the Act with new districts of their own, if any part of the intercepting sewers was found in a new district then the new drainage authority became the local authority within the meaning of the Act, and when section 91 was looked at there was no limitation put upon the new drainage authority as to any particular parish or parishes. Certainly, the local authority in question must be in the neighbourhood, but otherwise there was no limitation put in that section upon the new drainage authority. A new drainage authority of Hove was created, and a new district of Hove, by an Act of 1873. So that, under that Act, Hove was to be regarded as a local authority within the Act of 1870, and thus entitled to turn the whole of the sewage in its area into the intercepting sewers. The plaintiffs were therefore entitled, in his Lordship's opinion, to a declaration of their right, and also to apply for an injunction, though, if necessary, time would be given to the defendants to carry out such works as might be required to give effect to the plaintiffs' right.—Their Lordships accordingly allowed the appeal.

West Ham Sewage: Huge Claim by the L.C.C.—An arbitration enquiry was opened last week at the Surveyors' Institution, Westminster, before Sir Hugh Owen, sole arbitrator, between the London County Council and the Corporation of West Ham to determine what sum should be paid by the latter for the admission of the whole of their sewage into the sewers of the northern portion of the main outfall sewers belonging to the County Council, which sewers run on a high embankment through West Ham. The County Council claim the sum of £112,700 as a contribution towards the amount of the loans paid off up to the present date of moneys borrowed for the construction of the main system of sewerage. In addition, the County Council claim about £10,000 for interest, sinking fund, maintenance, management and working during the transitory period, and, finally, they claim an annual contribution from West Ham for principal and interest and sinking fund, and for the cost of management, maintenance and working, putting West Ham upon the footing of being part of the Metropolis. The enquiry was adjourned.

Builders' Scaffolding.—The case of *Davidson* v. *Hooydonk & Co., Ltd.*, recently came before the Court of Appeal. It was an appeal of the plaintiff from a judgment of Mr. Justice Wright in the King's Bench Division giving judgment for the defendants. It appeared that in December, 1898, the plaintiff, a builder at Newcastle, entered into a contract with the London and Lancashire, Ltd., of Bradford, to build a theatre at Blackburn for £20,000, and amongst other things the plaintiff had to put up a special scaffolding, and after he had finished using it to leave it for the use of all the trades, and the decorators. The London and Lancashire Co. entered into a contract with the defendants, decorators of London, to do the decorating work at the theatre. By this contract the defendants had to provide £200 to be paid plaintiff for the scaffolding, which was to become the property of the decorating contractors, and to be removed by them on the completion of the work. After defendants had finished their work they took down the scaffolding and sold it for the break-up price of £43. Plaintiff said he was entitled to £200. It actually cost £209 8s. 9d. to put up. Defendants said plaintiff was entitled to the £43, and brought that sum into court. They also contended that their contract was with the company, and that there was no privity of contract between plaintiff and themselves. Plaintiff's case was that he was entitled to have from defendants £200, the value of the scaffolding, as the price of goods sold and delivered.—The Court affirmed the decision of Mr. Justice Wright, and dismissed the appeal with costs.

St. Andrews Street Baptist Church, Cambridge, is to be entirely rebuilt, partly on the foundations of the old building. The tender of Messrs Kerridge & Shaw, of Sturton Street, Cambridge, has been accepted by the committee at £7,458, and the work has just been commenced. The architects are Messrs. George Baines, F.R.I.B.A., & R. Palmer Baines, 5, Clement's Inn, Strand, London, W.C.

The Portion of the Kremlin Wall at Moscow, which is shown on this page, is attributed to the time of Ivan the Terrible (contemporary with Elizabeth). The roof is of copper, but formed with tiles instead of sheets, the tiles being stamped like inverted Moresque battlements. The mass of the masonry is in yellowish brick with dressings, copes and mouldings in red brick.



THE KREMLIN WALL, MOSCOW. DRAWN BY PERCY E. NOBBS, M.A., A.R.I.B.A.

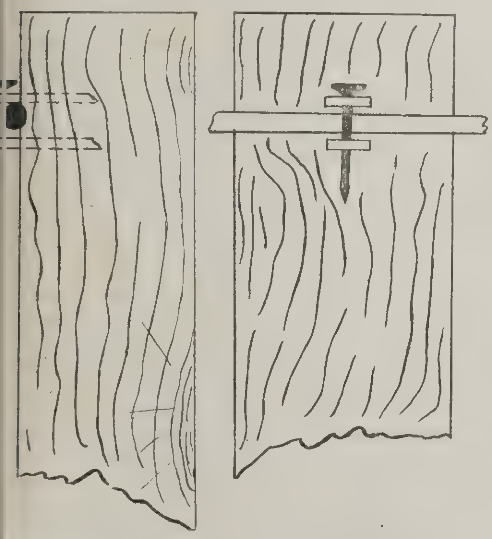
BARBED WIRE.

A New Method of Fixing it.

IT is hopeless to dream of barbed wire being used less frequently than at present: it is too useful to the farmer in the evil days which have fallen upon him, but during the winter months—say from November 1st to May 1st, when almost all the horned stock upon the farm are housed in buildings or in the yards—there is no agricultural reason whatever for the maintenance of barbed wire in position.

A farmer's objection to taking it down during the winter is the trouble and cost of the labour incurred, and especially is this the case with some cow-keepers, whose little holdings are often fearfully and wonderfully entangled with barbed wire.

The ordinary method of erecting such a fence is to drive in stumps so that they stand from 3ft. to 3ft. 6in. out of the ground and then to strain the wire on the posts at the extremities, securing it by staples at every stump. Of course when taking it down again each of these staples has to be drawn or cut.



It has occurred to the writer that a very simple plan, which he has adopted for some years, is not so well known as its excellence deserves, and possibly it may prove of some use in minimising the difficulty which seems yearly growing in all hunting districts. The plan is to strain the wire on posts at the ends in the usual way, but, instead of stapling it upon the intermediate stumps, to drive into each stump two staples (1½in. staples are long enough), the one about half-an-inch above the other, as shown by the above sketch, and at the correct height to receive the wire. They should project about ⅝in. from the stumps and slightly more than this if the stumps be rough. The wire is then placed between the staples and kept in position by means of a fairly large-headed nail passed point downwards through both staples. Rose-headed or wire-nails are the best for the purpose, and need not be longer than about 2in.

To take down the wire, it is only necessary to cut the staples by which it it kept strained at one end of the line, and two men can then roll the wire upon a reel almost as fast as another can remove the nails by means of a hammer or knife-blade, according to the kind of nail employed.

The reel need not be elaborate, but may be the simple one upon which the wire is wound when first purchased, and it may be carried on a stout stick, or by a very little ngenuity it may be mounted upon a wheelbarrow and so wheeled along the line of ence. The stumps of course may remain tanding, and the re-erection of the wire the next summer then becomes almost as simple proceeding as its removal. G. S. M.

Views and Reviews.

The Progress of Egyptology.

This archæological report comprises the work of the Egypt Exploration Fund and the progress of Egyptology under various investigators during 1901–1902. The former has already been dealt with in these columns, and as regards the latter we may say that it is a concise account of what the German, French and other archæologists are doing on Egyptian sites. The editor, Mr. Griffith, deals with archæology, hieroglyphic studies, &c., in general; Mr. Kenyon with Græco-Roman Egypt; Mr Crum with Christian Egypt; and Mr. Salmon on the "Progrès des Etudes Arabes." Several maps of Egypt are given at the back of the report.

"Egypt Exploration Fund: Archæological Report 1901-1902." London: Offices of the Fund, 37, Great Russell Street, W.C.

The Cathedral of Paris.

Students will find this an admirable handbook to Notre Dame de Paris. Like others of the same series, it deals first with the general history of the building and then describes each part in detail. The author devotes a brief chapter to the place of the cathedral in the evolution of French Gothic architecture, making considerable use of that indefatigable investigator, Viollet-le-Duc. It is remarked that Notre Dame was the first of the greater French cathedrals in which Gothic principles of construction were logically carried out—it is older than Amiens. The nave, with the exception of the extreme west end, was completed about 1195 and the west facade built in the early part of the thirteenth century. The two great towers were naturally intended to carry spires. Looking at the plan, it is at once seen to differ very materially from those of our own cathedrals; more especially in the transepts, which are very short, and the double aisles at each side of the nave—features quite French. It is noticeable, too, that there are no monuments choking the arcades, as at Westminster, and no screen between the nave and the choir; so that the whole length of the cathedral is uninterrupted. One need hardly say that Notre Dame has been through the hands of restorers, but the author, though opposed to restoration on principle, cannot help feeling that the work executed by M. Viollet-le-Duc and M. Lassus is far less objectionable than it might have been. Speaking of the west front, he says: "The sculptured decoration of the three great portals exceeds, if not in actual ornateness, at all events in real beauty, that of any cathedral in the west of Europe. Much of it has suffered at the hands of the iconoclast, but, looking to the vicissitudes through which Notre Dame has passed, it is wonderful that so much of the original sculpture has been preserved. The recent restoration has been carried out with a skill which is simply marvellous, and the uninformed observer may easily be betrayed into the belief that he is looking at an unaltered ancient work. Whether this is a gain or a loss each of us must decide for himself." The author describes in detail all the parts of the cathedral, and explains how they have been altered—especially the nave pillars, which were obviously first intended for quadripartite vaulting and consequently look awkward with the sexpartite system. Then of course the beautiful window glass is considered, and also Viollet-le-Duc's polychromatic decoration, which, in spite of all the elaborate precautions, the patience and the learning given to it, the author does not appreciate. "One wearies of the ingenious geometrical curves, the crosses, the squares, the lozenges, the coloured stars, the excessively and laboriously conventionalized foliage, and the rest. The whole strikes one as dead and mechanical, as mere covering of stone for the sake of doing so." The book is well illustrated from photographs and drawings.

"Notre Dame de Paris," by Charles Hiatt. Continental Churches Handbooks. London: G. Bell & Sons, Covent Garden, price 2s. 6d. nett.

Fletcher on Quantities.

Those who remember the earlier editions of this work will thoroughly appreciate the increase in size and the great improvement in quality of this last edition, which certainly make it one of the most complete works upon the subject. There seems to be no limit to the examples or detailed instructions that might be given without exhausting all that might be said about this important department of the work associated with building—sufficiently important, we maintain, in spite of Mr. Fletcher's assertion to the contrary, to make it necessary to treat the practice of it as a separate profession. Mr. Fletcher anticipates objection to his father's opinion that it can form a portion of an architect's practice by saying that he is aware that surveyors who do nothing but "quantity work" will join issue with this view. We would, however remind Mr. Fletcher that it is not only "surveyors who do nothing but 'quantity work'" who will object. Chief amongst these objectors will be those to whom the quantities are all-important, viz., the contractors. However, this is not the occasion to enlarge upon the matter.

The author has given a very complete set of examples of taking off, by taking a complete building—small, it is true—but one comprising a large variety of items. There are also good examples of individual items with detailed drawings, such as it is not often the good fortune of surveyors to have to work from. There will of necessity be some divergence of opinion as to the methods adopted, as even in such a prosaic business as the one this work deals with, there is room for individuality. A small thing—but one likely to lead to confusion—is open to objection. On pp. 271 and 277 dimensions of semicircles written in precisely the same way in the first instance are intended to indicate the area and in the latter the girth. The latter should be ascertained by the "taker-off," or some note added making the intention clear. The circular portions of stone coping on p. 295 should, we think, be taken as "extra *stone* and labour." These are questions of fact and not of opinion.

The chapter on legal decisions is interesting but, through no fault of the author, not so useful as it ought to be, as the legal opinions with regard to surveyors' work seem to show an alarming amount of judicial ignorance, *e.g.*, the well-known marvellous decision of Mr. Justice Quain (p. 245). However, some of the cases cited will be of use in relieving the surveyor's mind on the legal difficulties of his position. One would have thought that by this time his position as to appointment, liabilities, &c., would have been definitely settled.

The schedule of rate of wages will be found most useful, and altogether the work can be considered one of the most complete, and, used with discretion—as all text-books must be—of great assistance to the student of this important profession.

"Quantities for the use of Architects, Surveyors and Builders," by the late Prof. Banister Fletcher, J.P., F.R.I.B.A. Seventh edition, revised and enlarged by H. Phillips Fletcher, F.R.I.B.A., F.S.I., &c. London: B. T. Batsford, 94, High Holborn, price 7s. 6d.

Royal Academy Exhibition.

The receiving day for architectural works at this year's Royal Academy Exhibition is Friday, March 27th. We shall be pleased, as in previous years, to receive drawings from intending exhibitors, and undertake to deliver them at Burlington House free of charge; but they must reach us at latest by noon on the day mentioned. The earlier they are sent the better.

(*Continued from* p. 71.)

the great arch three doorways—the outer for the laity, and the middle for the cardinal, archbishop and clergy—leads into porches attached to a spacious narthex the entire width of the church, terminating at one end with an entrance from the side street, and with the baptistery at the other.

The narthex gives access to the nave, 60ft. wide, divided into three bays of 67ft. each, covered with domes rising out of pendentives. The aisles, 15ft. wide, are separated from the nave by marble columns supporting a continuous groined arcade. From the easternmost bays of the nave transepts of unique and interesting design project with additional entrances. Two larger chapels open right and left out of the transepts, with side aisles giving access to the sanctuary and to the sacristies.

Over the sanctuary will be suspended a gilded and decorated wooden crucifix, 30ft. high, with paintings of Christ, the four Evangelists, and the "Mater Dolorosa"—this will be the dominant note of the whole interior. The baldachino, flanked by eight monolithic columns resting on pedestals taking a semicircular form, bears a marble canopy. The High Altar is a solid block of Cornish granite, fine-axed over, 12ft. by 4ft. On the left side is the marble archiepiscopal throne on its own daïs, modelled after the ancient one in the Lateran basilica. The pulpit has been executed in Rome, and is of marble decorated with mosaics.

As regards decoration, two only of the side chapels are in a forward state of progress. In the Chapel of SS. Gregory and Augustine the altar and marble work are completed and the mosaic work is proceeding, while in the opposite chapel, that of All Souls, on the north side of the nave, the altar, with its reredos and pictures in *opus sectile*, is completed, and the finishing touches are being put to the mosaics of the vault and arches, which are from the cartoons of Mr. W. C. Symons.

Having described various works in hand or contemplated, the author drew attention to the working part of the cathedral—the sacristies, strong-room, stores, registry, &c. Working drawings of a marble flooring of great beauty and originality had been completed by the architect, a portion of which only is to be carried out.

The most striking feature of the building is the west front, with its deeply-recessed entrance arch of 40ft. span enclosing the tympanum, which is to be filled with a mosaic picture. The entrance arch is 4ft. wider in its span than that of St. Mark's at Venice, and is planned in receding orders, supported on columns whose entablature is carried across the entrance and beneath the three doorways, the doors for which are executed in teak, to be covered eventually with bronze plates. The upper portions of the front terminate again with domed turrets and are flanked to the north by the campanile set back from the upper portion of the front. The latter has a delicate entasis. The upper portion is gathered from the square to an octagon crowned by a teak-framed cupola covered with lead, and terminates in the bronze archiepiscopal cross, some 10ft. in height.

Mr. Hadfield concluded with a reference to Bentley's death. He had seen him the previous day at his office in the Adelphi and was then shown drawings of the great crucifix and marble pavements. They were to spend the next day together at his home at Clapham Common; but in the evening Bentley had a paralytic seizure, and passed away in the early hours of the following morning.

A discussion followed in which Prof. Beresford Pite, Mr. Alfred East, A.R.A., and Mr. Walter Millard took part. For want of space we are obliged to hold over our report of it till next week.

Keystones.

A Board School at Edinburgh is to be erected from designs by Mr. J. A. Carfrae, of 3, Queen Street, Edinburgh.

A new Asylum on the Horton Estate, London, is proposed to be erected at a cost of £569,500.

The Windows in St. Saviour's Collegiate Church, Southwark, in the north transept, are to be filled in with stained glass.

The Maternity Hospital, Govan, Glasgow, in Langlands Road, has been erected from designs by Mr. James Burnett.

A new Church of St. James, Walthamstow, is being erected at a cost of about £10,000. It will seat nearly 1,000 persons. The architects are Messrs. J. E. K. & J. P. Cutts.

"One and All Gardening" for 1903 has just been issued (92, Long Acre, W.C.). It is an astonishing twopennyworth, so that one is not surprised to learn the first issue will be of 80,000 copies.

The Annual Dinner of the Sanitary Institute, to be held on Friday, May 15th, at the Hotel Cecil, will be presided over by His Royal Highness The Duke of Cambridge, K.G., the President of the Institute.

Islington Church.—The demolition of the parish church of St. Mary in Upper Street, Islington, has been commenced. The church was only built about 100 years ago, but was recently condemned as structurally unsafe.

Sir Charles Wyndham's new Theatre in St. Martin's Lane is only separated at the rear from Wyndham's Theatre in Charing Cross Road by a small court. The architect was Mr. W. G. R. Sprague. The whole of the building has been decorated in the Louis XVI. style by Messrs. Waring & Co. The stage is 35ft. deep and 60ft. wide.

A new Bank at Aberdeen is being erected at the corner of Marischal Street and Regent Quay from designs by Mr. R. G. Wilson, of Aberdeen. The contractors are:—Mason, Mr. J. Morgan; carpenter, Mr. J. Henderson; slater, Mr. George Farquhar; plumbers, Messrs. Thom and Strachan; plaster, Messrs. James Bannochie and Sons; and painters, Messrs. Gordon & Watt.

British Standard Sections.—Referring to the note on p. 49 of our last issue, Mr. Leslie S. Robertson, M.I.C.E., the secretary of the Engineering Standards Committee, states that the Committee is really only commencing a large portion of its work, and the publications just issued, important as they are to the steel trade, only cover a very small portion of the total work in hand.

Value of Land in the City.—The building site at the corner of Cheapside and Paternoster Row, occupying a ground area of 945 ft. sup., and with a frontage of 71ft., was last week let by auction, on an 80 years' building lease, at £1,150 per annum, being at the rate of £1 4s. 4d. per ft. rental, which, capitalised at thirty years' purchase, would give a freehold value of £36 10s. per ft. Mr. Delissa Joseph, F.R.I.B.A., is designing the new buildings which are to occupy the site.

Motherwell Poorhouse Competition.—The Dalziel Parish Council have selected plans for a new poorhouse, which is to cost £12,000. Fourteen sets of competitive plans had been submitted to Mr. Bryden, architect, Glasgow, as assessor, and on his recommendation the awards were made as follows:—(1) Mr. Alexander Cullen, Motherwell; (2) Messrs. Ninian M'Whannell and John Rogerson, West Regent Street, Glasgow; (3) Mr. Frank Southorn, St. Vincent Street, Glasgow. A committee was appointed to confer with Mr. Cullen to have the plans approved by the Local Government Board.

The Income Tax Recovery Agency has been established at 3, Copthall Buildings, London, E.C., to give advice free of charge on receipt of a stamped addressed envelope.

Dover Breakwater.—The first block was laid last week in connection with the great breakwater across Dover Bay. The breakwater will be 4,300ft. long.

A new Electric Light.—The Library of the Royal Institution will be illuminated by about 40ft. of "Linolite" on the occasion of next Friday's evening lecture.

The Val de Travers Asphalte Paving Co., Ltd., have declared a dividend of 10 per cent. for the year 1902, together with a bonus of 20s. per share, free of income-tax, carrying forward £13,046 to next account.

The Edinburgh Master-Builders' Association has elected Mr. Neil M'Leod president, Mr. James Cameron secretary and treasurer, and Messrs. James Forrest, Thomas Hume, and David Wilson, vice-chairmen.

Edinburgh Architectural Association.—No. 3, Vol. 3, of the "Transactions" has just been issued. It consists of the following papers: "Restoration of the Mausoleum at Halicarnassus," by Thomas Arnold, A.R.I.B.A; "Inverkeithing," "Rosyth Castle" and "Elgin Cathedral," by Henry F. Kerr, A.R.I.B.A.; somes notes on Bavelaw Castle; and a paper on "The Architectural Antiquities of Leith," by James Campbell Irons, S.S.C.

The Wellington Memorial.—In our last issue we published a photograph of Alfred Stevens's full-size model of the equestrian statue of the Duke as it stood in the vaults of St. Paul's Cathedral. The accompanying paragraph stated that this actual model was in Mr. Tweed's studio at Chelsea: but this is not so. It is a plaster cast taken from Stevens's model that Mr. Tweed is working upon, it being the intention to preserve the original model in a museum.

New Reference Library and Art Gallery for Manchester.—On Friday last the Manchester Corporation Infirmary Committee decided to offer £400,000 for the present site of the Manchester Royal Infirmary in Piccadilly, the Board of Management of that Institution having resolved to build new headquarters away from the centre of the city. The land so acquired will be utilised for the erection of a new reference library, the top floors of which will be so arranged as to be suitable for art gallery purposes, subject to the approval of the Art Gallery Committee.

Pontypridd Public Offices Competition.—Out of the fifty-five designs received by the Pontypridd District Council for new offices, for which three prizes were offered, the assessor has pronounced the following to be the best:—1st, Those submitted by Mr. Henry T. Hare, 13, Hart Street, Bloomsbury, London; 2nd, Mr. Hanley D. Adshead, 46, Great Russell Street, London; 3rd, Mr. A. Colbourne Little, 9, Gray's Inn Square, London. Mr. Hare will superintend the work of erection, and the authors of the other designs will receive premiums of £60 and £40 respectively.

Competition Reform Society.—The committee disapproves of the existing conditions of the two competitions respectively for a town hall, &c., at Yeovil and a new boys' school at Bolton-upon-Dearne, but is endeavouring to get them revised. In the opinion of the committee the conditions of both are "entirely unsatisfactory." They therefore request their members to abstain from competing unless they receive a further communication to the effect that the conditions have been satisfactorily revised. The Committee notes that the conditions of the competition for a proposed town hall at Chepping Wycombe have been revised, and now recommends the same as satisfactory.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Qualification of Building Surveyor.

LONDON, N.W.—G. T. M. writes: "What are the qualifications for a building and sanitary inspector?"

See reply to an enquiry upon this subject on p. 335 of our issue for July 9th, 1902.

Age Limits for R.I.B.A. Examinations.

SUSSEX.—ENQUIRER writes: "What are the age limits for the R.I.B.A. examinations—is eighteen too old to start?"

There is no limit in the ordinary examinations. In the Special the applicant must not be less than twenty-five years of age. Eighteen years is none too young to take the Preliminary.

Masons' Marks.

WHITBY.—CAEDMON writes; "In what number of THE ARCHITECTURAL REVIEW did an illustrated article on masons' marks appear? Is there a cheap book dealing with this subject?"

THE ARCHITECTURAL REVIEW for October, 1900. We do not know of any other publication on the subject.

Fees for Plans, Tracings, &c.

TIPTON.—QUERIST writes: "What would be a reasonable fee for the following?:—(1) Preparation of a full set of plans and sections for a house costing £200; (2) coloured cloth tracing from same for district surveyor; (3) personal superintendence during course of erection. My client did not give the work to a contractor, but bought all materials and let the various trades."

(1) £10; (2) £1; (3) £9, making £20 in all.

Country Church to Measure within Fifteen Miles of Westminster.

LONDON, S.E.—ARCHITECTURAL CYCLIST writes: "Kindly name some country churches worth measuring within ten or fifteen miles' radius of Westminster (south preferred)."

There is no complete country church worth measuring within the radius named, though there are some good fragments at Merton, including a simple but beautiful Decorated window at the east end of the north aisle; a Norman doorway on the north side apparently of two dates, or else made up of two fragments which do not agree; a door to this doorway with extremely old, probably thirteenth-century, strap ironwork on it; a rich timber porch, date about 1400, which has been cased in modern times, grained and varnished, but is still worth measuring; and a Perpendicular chancel roof. G. A. T. M.

Architectural History.

SHEERNESS.—A. M. S. writes: "I should be glad to have some information about books to purchase for the Society of Architects' examination. I wish to keep the expense down as much as possible."

Banister Fletcher's "History of Architecture" (B. T. Batsford, 21s.) should give all the information you require.

Jacks.

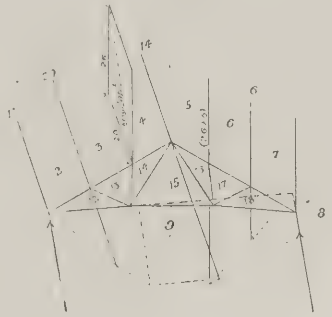
WALLSEND-ON-TYNE.—BEDE writes: "What is the name of the appliance shown by the accompanying drawing (not reproduced)?"

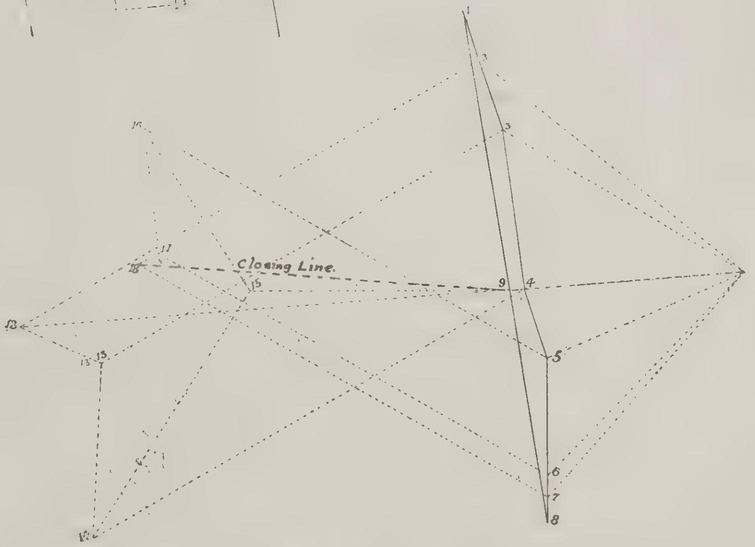
The appliance is a coach-jack and is used for raising wheels of carriages just off the ground so that they can be turned round for cleaning, painting or repair. The short arm is placed just under the axle next to the hub and requires no greater projection.

Stresses in Roof Truss.

HALIFAX.—G. H. B. writes: "At last year's Building Construction Examination, Honours, Part I., I gave to question 44, on the iron roof truss, the solution shown by the accompanying diagrams. As it does not correspond with your answered questions, I should like to know if I should get the marks for it."

Your solution is seriously wrong. (*a*) It is quite allowable to place the ceiling loads on the top of the truss for the purpose of finding the reactions on the supports of the truss, but they must be attached to their proper joints when the stresses in the members are being found; this has not been done. (*b*) In replacing the truss, considered as a rigid body, by the rope or string as drawn, the forces 4, 5, and 5, 6, cross one another before reaching the string. In such a case 5, 6, should come on the diagram of stresses *before* 4, 5, and is not so drawn. There are other minor defects. As to whether marks should be given for such an answer, very much depends upon the standard set up by the examiner. The answer shows some knowledge of the routine of drawing stress diagrams, but not sufficient grasp of the principles on which the work depends. The reports of the examiners are published; it appears that the general quality of the answering was such that a *low standard* had to be applied in judging, and it is quite possible that some marks were given for this answer.





STRESSES IN ROOF TRUSS.

Stability of Roof.

PORTSMOUTH.—QUERIST writes: "With a corrugated iron roof, 100ft. by 30ft., supported on 13ft. columns, with entirely open sides, what precaution should be taken to prevent the building blowing over?"

Assuming a curved roof of ordinary rise, the total pressure tending to overturn it might amount to about 5 tons, and if all the columns are well bolted down to concrete blocks, containing not less than 4 cub. ft. each, there would be little danger of overturning. There is, however, a possibility of the roof being lifted unless well fastened to trusses, and trusses bolted to heads of columns. HENRY ADAMS.

Circular Concrete Reservoir.

FILEY.—R. W. S. writes: "Does the accompanying sketch (not reproduced) show a practicable and economical method of constructing a reservoir to hold about 8,000 gals.?"

The sketch shows a monolithic structure of 5 to 1 concrete, 15ft. diameter and 8ft. deep, upon a cylindrical base 18ft. high, and strengthened by three $2\frac{1}{2}$ by $\frac{5}{8}$ iron rings embedded in the walls. The tension to be resisted will be $\frac{15 \times 8 \times 62{\cdot}5}{2} = 3{,}750$lbs. on each side at the bottom of reservoir, reducing to nothing at the top. The centre of pressure from the water is at two-thirds of the depth, and if the walls were free to move outwards the whole tank could be tied in by an iron hoop at this level, but the connection with the bottom alters the conditions, and the knowledge of the centre of pressure has in this case no practical value. Owing, however, to the greater pressure towards the bottom the strengthening should be somewhat in accordance therewith. With three rings in a depth of 8ft. the distances should be about 1ft. from bottom to centre of first, 1ft. 6in. centre to centre between first and second, and 2ft. 6in. between second and third. The cornice may then have a light ring, say $\frac{3}{4}$in. sq., embedded in it. They should all be in the centre of the thickness and be welded to complete the circle. The concrete for the reservoir should be strong and impervious, so that 4 to 1 floated with neat cement inside or asphalted would be more desirable than plain 5 to 1. It should also be allowed to set for three months, if possible, before the water is let in, to allow the strength to develop. Spacing the rings as above, the strength of the walls may now be taken as a whole. The total tension to resist on each side will be $\frac{3750 \times 8}{2} =$ 15,000lbs., of which the concrete will take, say, one-third, leaving 10,000lbs. for the iron rings, $\frac{10000}{3} = 3{,}333$lbs. each, which at $2\frac{1}{2}$ by $\frac{5}{8}$ will be less than 1 ton per sq. in. This seems a very large margin of safety to allow, but in view of the want of experience in the mode of construction a high factor of safety is necessary. As regards the support for bottom of reservoir, it is presumed that old rails are intended to be used below the concrete, but no mention is made of the shape, whether flange or double-headed rails, but either would no doubt be sufficient. The 100lbs. per ft. steel girder would also be ample if the ends are supported on a good stone template. The base of wall supporting tank will have a load of about 3 tons per sq. ft. to carry, which is not excessive. The footing, being spread to 2ft. 6in. wide, will cause about $1\frac{1}{2}$ tons pressure on the soil, which is not too great if it is good gravel; but if clay, the footing should be carried down to at least 5ft. below ground level, and spread to 4ft. wide, with batter to meet the walls and, say, three rows of stout hoop-iron embedded in it with the ends hooked over to make a continuous tie. All the ironwork should be protected by some good composition, such as the "carbonising coating" manufactured by the Goheen Manufacturing Co., Canton, Ohio, U.S.A., 1 gal. of which will cover 1,000 sq. ft.

HENRY ADAMS.

Alterations in Contract.—Architect's Power to Order Extras.

PORTSMOUTH.—R. J. J. writes: "(1) In what position does an architect find himself when a contractor refuses to execute additions, deductions or alterations, there being no condition expressly giving the owner or architect power to vary the contract? (2) Would a clause providing for the manner of payment for extras imply the architect's power to order such variations? (3) If the architect has the power to order variations, and did so to such an extent as to very materially reduce the contract, must the contractor submit? It might happen that only the class of work he least wanted would remain to be done. The above refer to simple contracts—no quantities."

(1) The contractor must carry out the alterations, deductions or additions, or you can get someone else to do it and deduct it from the builder's account. (2) Yes. (3) The architect certainly has the power to order any deductions he pleases, and the work executed is to be paid for according to the priced bill of quantities.

Drains to New Houses: Liabilities of Corporation.

TENBY.—SEWER writes: "The owner of land, A, on one side of a public road proposes to build some semi-detached houses fronting the road. There is no sewer actually in the road within 120ft. of the proposed houses; but on the opposite side there are houses on land belonging to the Corporation, which are drained into the main sewer in a street which joins the public road at right angles, near the centre of proposed buildings. (1) A asks the sanitary authority to lay a sewer in the public road to enable him to drain the houses. They demur and propose to extend the sewer in the side street (their own property as a Corporation) up into the public road only, so as to bring the end within 100ft. of most of the houses, and then for A either to construct a sewer himself in the public road, or join each block separately with the end of the sewer. Can they not be compelled to put a sewer in the road, or can they compel A to do it? The natural and proper line of drainage would be down the road. (2) As the houses are semi-detached, each two are shown drained into the road by one line of pipes. An objection is made that this will constitute the joint portion a public sewer repairable by the sanitary authority. Have they any right to veto any such arrangement? I may say they have no right under their by-laws, which are antiquated and not based on the Model By-laws. (3) Can it be right for an owner to be compelled to lay a sewer in a public road when, the day after, the authority may take possession of it as a public sewer and use it for the surface drainage of the road?"

(1) The local authority apparently offer to do all that can be reasonably expected under the circumstances, leaving A to connect his drains with the public sewer in some approved and convenient manner. (2) Yes, the Public Health Act of 1875 states that all drains emptying into a sewer must comply with the *regulations* (not by-laws) of the local authority. (3) Yes, under certain conditions the local authority are quite justified in calling upon an owner to lay such a drain or sewer for the purpose of connecting his property with the public sewer. T. E. C.

Book on Marble.

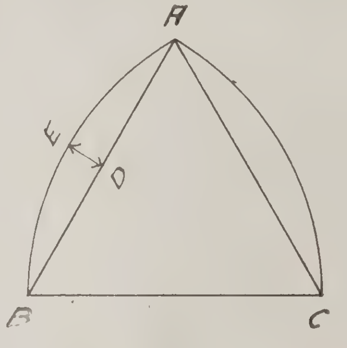
LONDON.—ASSISTANT writes: "Is there a good economical work on marble, with coloured plates?"

"Limestones and Marbles: Their History and Uses," by S. M. Burnham (S. E. Cassino & Co., Boston, U.S.A.).

Quantity Surveying.

PAKEFIELD.—T. M. writes: "(1) Is there a paper devoted to building published in Ireland? (2) Would the London system in quantity surveying be recognized in Ireland? (3) Is there a method of exactly getting the deductions for Gothic openings from springing without dividing them geometrically into sections? I refer to deductions for brickwork."

(1) Yes; the "Irish Builder," published weekly, price 1d., at 11, Lower Sackville Street, Dublin. (2) From enquiry I find that the London system would generally be recognized in Ireland. Irish surveyors generally do not go so much into detail as the London surveyors do, but otherwise follow the same lines. (3) There is a method of getting deductions for Gothic openings, but it is such a lengthy and roundabout one that in practice it is much better to divide into sections, besides being quite as accurate. However, I give Peter Nicholson's method for what it is worth:—(*a*) Take the triangle ABC in the usual way. (*b*) Multiply the length of the chord AB by the height DC, and to two-thirds of the product add the quotient arising from dividing the cube of the height DE by twice the length of the chord AB. The formula would be—



$$\tfrac{2}{3}\,AB \times DE + \frac{DE^3}{2AB}.$$

As there are two of these in a Gothic opening the result must obviously be twiced and added to the area of the triangle.

W. E. D.

"Making-up" a Road.

URBAN writes: "Has an urban authority in 'making-up' a road under the Private Street Works Act, 1892, power to include in the cost of the works, and to charge the frontagers therewith, the amount expended by them in relaying or repairing defective sewers (soil and surface water) in the road? Did not the authority accept the responsibility of these sewers, and did not they become vested in the authority from the date (several years previously) when they permitted them to be connected to the general drainage system of the district? Further, are not these sewers really 'sewers' and not private 'drains,' and as such repairable by the authority?"

If the street is not sewered to the satisfaction of the urban authority, then the Act provides for the local authority apportioning the cost of the necessary works in connection therewith amongst the frontagers. No hard-and-fast rule can be laid down as to what constitutes the legal definition of a drain or sewer, and which is capable of application to every individual case. The exact interpretation depends to a large extent upon the local conditions, and it by no means follows that because a private drain which receives the drainage from more than one house has been connected to the general drainage system of a district that such drain or sewer thereby becomes vested in the local authority for maintenance or repair. Under the Public Health (Amendment) Act of 1890, when two or more houses belonging to different owners are connected to a public sewer by a single private drain, this drain may, under certain circumstances, be considered as a drain and not a sewer. The advice of a local solicitor should be taken upon the point at issue, as he would be able to make himself acquainted with the special circumstances bearing upon it. T. E. C.

Gothic Vaulting.

LANCS writes: "Kindly name a work dealing with the construction—not the design and geometrical setting-out—of Gothic vaults. I want one that shows the centering, &c."

We do not know of any book that will give you the information you require.

Stains for Wood.

CHESTERFIELD.—H. B. writes: "(1) Who are makers of green and blue stains for use on pitch-pine, canary, white wood or oak; also what length of time may they be expected to retain their colours under ordinary circumstances? (2) Would whitewash or colour-wash applied to old weather-beaten brickwork prevent further decay and act as a preventative?"

(1) Fumene Company, 47, Martin Road, Woodside, South Norwood, and Henry C. Stephens, 57 and 59, Aldersgate Street, E.C., are makers of good stains. A green or blue stain should last about fifteen years. (2) Yes.

Terra-Cotta Modelling.

BLANTYRE.—P. G. writes: "Where can I obtain little modelling miniatures in brick-red and buff terra-cotta?"

We do not know exactly what you mean by "modelling miniatures." But you should be able to get what you want from Messrs. Doulton & Co., of South Lambeth, S.W.

Books for R.I.B.A. Intermediate Examination.

HULL.—H. T. F. writes: "What books should I study for the R.I.B.A. intermediate examination in (1) classic ornament; (2) English mouldings and ornament, 1000–1550 A.D.; (3) history of Mediæval and Renaissance architecture in Europe; (4) stresses and strains? Also which two plates in Phenè Spiers's 'Orders' do you recommend to be drawn for testimonies of study?"

(1) R. Phenè Spiers's "Orders." (2) Pugin's "Specimens of Gothic Architecture" and J. K. Colling's "Details." (3) Banister Fletcher's "History of Architecture." (4) Rivington's "Building Construction," Vol. IV. The student must choose the plates of the Orders for himself.

Oak Gate Posts.

BURNHAM.—W. J. P. writes: "I recently supplied and fixed oak gate posts 12ft. high and 9in. square, wrought, moulded, and oiled with boiled linseed. Four or five months afterwards the posts commenced to open, and eventually looked, I must confess, rather bad. The architects then condemned them and ordered me to procure others and fix them. I contended that as the architects allowed me to fix them (the posts were on the job a considerable time before being fixed, and were inspected by the architects) I was not responsible; in addition to which oak always does open. However, I obtained other posts (the very best I could get) and kept them for some months; these also opened, although covered up, and at last the architects decided to allow the posts to remain if I would paint and grain them. Were the architects' demands reasonable?"

It is impossible to prevent oak warping and splitting when exposed outside and difficult enough in dry situations. The architects' demands were therefore unreasonable, and you are entitled to an extra.

Sanitary Institute Examination.

COLNE.—ENQUIRER writes: "Please recommend the most suitable books to obtain for preparing for the Sanitary Institute examination in practical sanitary science, together with price and name of publisher."

Apply to Mr. E. White Wallis, the Secretary of the Sanitary Institute, Parkes Museum, Margaret Street, W.

Working Stress.

LONDON, S.W.—J. S. writes: "I want some steel joists to carry a certain load at a given distance between supports. The manufacturers state that joists of the size and span mentioned will sustain a distributed load of 13 tons with a working stress of 5 tons per sq. in.; but with a working stress of 10 tons per sq. in. they will carry more than double. What is the working stress, and what has it to do with the load to be carried?"

When a beam of any material or shape is supported at the ends and loaded on top it bends. The bending causes compression, or tendency to crush, in the upper portion, and tension, or tendency to tear, in the lower portion. The intensity of this predisposition to compression or tension is called stress. The ultimate stress is the amount per sq. in. at which failure would take place, while working stress is the safe limit which may be adopted in practice. The working stress for wrought-iron with dead loads is 5 tons per sq. in. and for mild steel 7 tons, but in architectural work mild steel is often used at a higher stress and considered safe up to a maximum of 10 tons per sq. in. It depends upon the circumstances of the case whether it should be kept to the lower limit or allowed to reach the higher one. With a moving or vibratory load the working stress must be kept lower, as a suddenly applied load may double the stress. There are other points to consider besides the maximum compressive or tensile stress in a steel joist; for instance, a stress of 10 tons per sq. in. may not be too much for the strength of the joist, but the load that produces it may cause an inconvenient amount of deflection. Also, in short joists the load may not be sufficient to distress the flanges and may yet produce an excessive shearing stress on the web, which may require stiffening over the abutments. HENRY ADAMS.

Measured Drawings of Eton College.

Rev. H. C. WINDLEY (St. Chad's, Bensham, Gateshead-on-Tyne) writes: "Your correspondent will find plans of Eton in the appendix to Willis and Clark's 'Architectural History of the University of Cambridge,' and a few small scale drawings of parts of the buildings in the letterpress of the first volume of that history. Eton is included in this history because it was the sister-foundation of King's College, Cambridge."

The Position of Builders who are Town Councillors.

MACCLESFIELD.—BUILDER writes: "Under the new Education Act what would be the position of builders who are also town councillors as regards doing any work at school buildings the Committee of which receive aid from the Council? This may be a serious matter to some builders who are town councillors."

I can find no case decided on the point you mention under the Education Act. However, outside the special regulations as to contracts which every corporate body is empowered to make, the principle upon which the decisions are made in regard to dealings between parties situated like yourself is that a trustee cannot benefit by his trust. If a builder happens to be a member of a corporate body, with which body as an outsider he contracts, strictly speaking he cannot make any profit by his contract, because as a member of the Council he is, so to speak, a trustee for the ratepayers, out of whose moneys as a builder he is to be paid. As a builder he is entitled to a fair and legitimate profit in his contract; as a trustee he is bound to hand over that profit to the ratepayers or their representative the Town Council on the principle just stated. But in practice the principle is seldom if ever so strictly administered, so long as the contract is *bonâ fide* and reasonable. However, in the special case you mention, as the persons or body in whom the schools are vested only receive a grant "in aid" from the Town Council, it is very improbable that any Court would hold that you stood in such a fiduciary position towards them as to cause the relationship of trustee and *cestui-qui-trust* to arise between the parties. W. JOHNSON-ROBERTS.

Size of Girders and Piers for Travelling Crane.

LONGTON.—STUDENT writes: "The accompanying plan (not reproduced) shows an 8-ton travelling crane on girders. Will the piers be strong enough, and what size girders should be used?"

The only difficulty in this case is that putting the girder near the face of the piers brings an excessive stress upon the face-work, so that it would be an advantage to face the piers with blue bricks or other hard bricks set in cement. The sectional area of the piers is sufficient. The girders may be 8 by 5 by 28lb. or 8 by 6 by 35lb. rolled steel joists, these being two of the new standard sections fixed by the engineers' conference and made by Dorman, Long & Co. HENRY ADAMS.

Chances in India and South Africa.

NOTTINGHAM.—F. G. writes: "I wish to go abroad, either to Africa or India. What is the best course for me to adopt and the best time to go? I am about twenty years of age and have a good practical knowledge of plans, details, measuring-up and management of works in course of erection, having been upon factories, sewerage works, &c.; also of office routine and book-keeping, holding at present a position in a large contractor's office."

It is useless to go to India without passing through the Engineering College at Cooper's Hill, which can only be entered after a stiff competitive examination for which twenty is the age limit, the course of training there costing £1,000 and occupying three years. India is ruled, and not colonised, so that only highly-trained men belonging to the governing classes can find openings there, all contracting work being done by natives. If, however, you have a little capital you might very well succeed in time in South Africa; but you would have to go out on your own responsibility and take your chance. It would be better for you to wait for two or three years first, however, few having sound enough knowledge at your age to compete successfully with others in a country to which many good men have gone recently. G. A. T. M.

Obituary.

Mr. John Grey, builder, of Warkworth, died recently.

Mr. William Wimble, F.R.I.B.A., of 9, Queen Victoria Street, E.C., who died on January 12th, aged 54, left property which has been valued at £10,519 gross.

Mr. George Lightfoot, a builder, who was engaged in erecting some houses in Cannon Street, St. Albans, recently died whilst in the execution of his work. His son and other workmen had been with him during the afternoon. As he was cutting laths for use in the construction of the ceiling of one of the rooms he suddenly fell to the floor, dead.

Mr. E. H. Shorland.—We regret to announce the death of Mr. Ernest Hooper Shorland, of the firm of Messrs E. H. Shorland & Brother, of Manchester, which took place at his residence Brook's Bar, Manchester, on March 9th. Mr. Shorland was among the foremost of warming and ventilating engineers, and his firm have carried out, and have in progress at present, some of the most important contracts in the Kingdom. The business of the firm will now be under the active management of Mr. F. H. Shorland, who has been connected with his brother in the business all his life.

Mr. J. B. Pearce, F.R.I.B.A., architect and surveyor, of Upper King Street and Theatre Street, Norwich, died last Monday week, after a prolonged illness. Deceased was the son of the late William Pearce, of Intwood, and was born at South Walsham in 1843. He was educated at Beccles, and afterwards served his articles with the late Mr. Morant, then of Yarmouth, and subsequently borough engineer at Norwich and Leeds. He started in business at Norwich as an architect and surveyor, and he speedily secured a considerable amount of business. He had done a great deal of work for public bodies in all parts of Norfolk and Suffolk, and held the position of architect to the Norwich Board of Guardians and the Forehoe Incorporation. The Yarmouth Town Hall and the Norwich Agricultural Hall are his chief works. He built numerous Board schools, restored a number of churches, and did work in connection with most of the workhouses in Norfolk and Suffolk.

Prof. T. Roger Smith.—We much regret to announce the death on March 11th of Prof. Thomas Roger Smith, of Temple Chambers, Temple Avenue, London, E.C. Deceased had only just resigned the chair of architecture at University College, London, which he had held since 1879. He was elected an Associate of the Royal Institute of British Architects in 1856 and a Fellow in 1863. He was president of the Architectural Association during the sessions 1860-1 and 1863-4. He was district surveyor for West Wandsworth, and for the year 1900-1 Master of the Carpenters' Company, to which company he acted as examiner in carpentry and joinery and in sanitary building construction. He was also president of the British Institute of Certified Carpenters and a member of the Statutory Board of Examiners under the London Building Act, and was an examiner in architecture for the Education Department. His firm, Messrs. T. Roger Smith & Son, were architects of the North London Hospital for Consumption, the Ben Jonson Board School at Stepney, a sanatorium at Reedham, the new laboratories at University College, London, and Elphinstone College and Post-Office, Bombay. He was the author of "Acoustics in relation to Architecture and Building" (Crosby Lockwood & Son); with Mr. John Slater, of "Classic and Early Christian Architecture"; and with Sir Edward J. Poynter, P.R.A., of "Gothic and Renaissance Architecture" (both the latter published by Simpson Low, Marston & Co.).

Current Market Prices.

FORAGE.

		£	s.	d.	£	s.	d
Beans	per qr.	1	9	9	1	12	3
Clover, best	per load	4	7	6	4	15	0
Hay, best	do.	3	15	0	5	10	0
Sainfoin mixture ..	do.	3	15	0	4	5	0
Straw	do.	1	8	0	1	18	0

OILS AND PAINTS.

		£	s.	d.	£	s.	d.
Castor Oil, French ..	per cwt.	1	1	0	1	2	2
Colza Oil, English ..	do.	1	3	0		—	
Copperas	per ton	2	2	6		–	
Lard Oil	per cwt.	2	13	0	2	14	0
Lead, white, ground, carbonate	do.	1	4	10		—	
Do. red	do.	1	0	4½			
Linseed Oil, barrels ..	do.	1	4	0			
Petroleum, American ..	per gal.	0	0	5¼	0	0	5⅜
Do. Russian	do.	0	0	4⅛	0	0	4¼
Pitch	per barrel	0	7	0		—	
Shellac, orange	per cwt.	5	15	0		—	
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Home Melt ..	per cwt.	1	10	3	1	11	0
Tar, Stockholm	per barrel	1	1	6		--	
Turpentine	per cwt.	2	4	4½		—	

METALS.

		£	s.	d.	£	s.	d.
Copper, sheet, strong ..	per ton	78	0	0		—	
Iron, Staffs., bar	do.	6	5	0	8	10	0
Do. Galvanised Corrugated sheet ..	do.	11	10	0	11	15	0
Lead, pig, Soft Foreign ..	do.	13	15	0	13	17	6
Do. do. English common brands	do.	14	0	0	14	2	6
Do. sheet, English 3lb. per sq. ft. and upwards	per ton	15	0	0		—	
Do. pipe	do.	15	10	0		—	
Nails, cut clasp, 3in. to 6in.	do.	9	5	0		—	
Do. floor brads	do.	9	0	0		—	
Steel, Staffs., Girders and Angles	do.	5	15	0	6	5	0
Do. do. Mild bars ..	do.	6	12	6	7	2	6
Tin, Foreign	do.	139	0	0	1[illegible]9	10	0
Do. English ingots ..	do.	140	0	0		—	
Zinc, sheets, Silesian ..	do	24	0	0		–	
Do. do. Vieille Montaigne	do.	24	10	0		—	
Do. Spelter	do.	23	10	0	23	2	6

TIMBER.

Soft Woods.

		£	s.	d.	£	s.	d.
Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow ..	do.	5	5	0	6	5	0
Do. Pitch	do.	3	0	0	3	4	0
Laths, log, Dantzic ..	per fath.	4	10	0	5	10	0
Do. Petersburg ..	do.	7	5	0		—	
Deals, Archangel, White—							
Do. 2nd 3×11 ..	per P.Std	31	10	0		—	
Do. 3×9 ..	do	11	0	0		—	
Do. 3rd 3×11 ..	do.	13	15	0		—	
Do 3×9 ..	do.	13	5	0	13	15	0
Do. 5th Yellow 3×9 ..	do.	8	10	0		—	
Do. Riga	do.	6	15	0	12	10	0
Do. Petersburg 1st Yellow	do.	10	10	0	11	5	0
Do. do. 2nd do. 3×9		11	0	0		—	
Do. do. 3rd Yellow 3×9	do.	9	15	0		—	
Do. do. 1st White 3×11	do.	14	0	0		—	
Do. Gefle Inferior, 5th Yellow 3×11	do.	7	0	0		—	
Do. do. do. 2½×9	do.	8	15	0		—	
Do. do. 3rd Yellow, dry 3×9	do.	14	0	0		—	
Do. do. do. 2½×9	do.	13	0	0		—	
Do do. do. 3×8	do.	10	0	0		—	
Do. Keret 3rd Yellow 3×11	do.	12	5	0		—	
Do. Galatz, unsorted White 3×9	do.	8	15	0		—	
Do. Quebec, 3rd White Spruce 14 to 16 ft. 3×10	do.	9	5	0		—	
Do. do 3×6	do.	7	5	0		---	
Do. Montreal, 4th Bright Yellow Pine, 3×11	do.	10	10	0		--	
Do. Onega, 2nd White— 2×7 & 2×8	do.	8	12	6		—	
Do. do. 5th Yel. 3×9	do.	9	15	0		—	
Do. Sandarne, 1st and 2nd White, 3×11	do.	13	0	0		—	
Do. do. 3rd Yellow, 3×9	do.	16	10	0		—	
Do. Montreal, White Spruce 2nd 3×7	do.	7	8	0		—	
Battens, all kinds ..	do.	6	15	0	12	5	0
Flooring Boards 1in. prepared, 1st	per square	0	8	9	0	10	0
Do. 2nd	do.	0	8	3	0	9	6
Do. 3rd &c.	do.	0	6	9	0	8	6

Hard Woods.

		£	s.	d.	£	s.	d.
Ash, Quebec	per load	3	12	6		--	
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	15	0	0	20	0	0
Cedar, Cuba	per ft. sup.	0	0	5¼		—	
Do. Honduras ..	do.	0	0	$4\frac{5}{16}$		—	
Do. Tobasco	do.	0	0	$4\frac{13}{32}$		—	
Elm, Quebec	per load	4	0	0	5	2	6
Mahogany, Average Price for Cargo, Honduras ..	per ft. sup.	0	0	5¾		—	
Do. African ..	do.	0	0	$4\frac{13}{16}$	0	0	5½
Do. St. Domingo	do.	0	0	3¼	0	0	6
Do. Tobasco ..	do.	0	0	$4\frac{21}{32}$		—	
Do. Cuba ..	do.	0	0	$10\frac{19}{32}$		—	
Do. Lago ..	do.	0	0	$3\frac{15}{16}$	0	0	4⅞
Oak, Dantzic and Memel	per load	3	5	0	3	15	0
Do. Quebec	do.	6	5	0		10	0
Teak, Rangoon, planks ..	do.	16	0	0	17	10	0
Wainscot, Riga (Baulk)	do.	3	15	0	5	15	0
Walnut, Odessa Crown	do.	3	15	0	5	15	0
Do. American ..	per ft. cube	0	2	0		-	
Do Lagos	per ft. sup.	0	0	$3\frac{19}{32}$		—	

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

Buckley (Flintshire).—For the erection of a free library. Messrs. J. H. Davies & Sons, architects, 14 Newgate Street, Chester :—

	Contract No. 1.		Contract No. 2.		
Davies Brothers	£1,481	0	£30	7	6
R. Williams	1, 59	2	26	17	0
Parker Brothers	1,3 7	0	30	0	0
Pritchard	1,335	0	30	0	0
P. Edwards	1,320	0	60	0	0
R. Davies	1,320	0		—	
Wright & Sons	1,285	0	25	0	0
R. Peters,* Buckley ..	1 22[illegible]	0	55	0	0
Kitchen	1,150	0	25	15	0

* Accepted.

Carshalton.—For the construction of about 2¾ miles of stonework pipe sewers, with all the necessary manholes, lampholes, ventilators and flushing arrangements, for the Carshalton Urban District Council. Mr W. Willis Gale, A.M.I.C.E., engineer, High Street, Carshalton :—

	£	s.	d.
J. Moore, Rochdale	£12,722	0	0
C. Ford, Harlesden, N.	9,977	0	0
A C. Soan, Streatham, S.W.	9, 5	11	0
T. Adams, Wood Green	8,722	12	7
S. Kavanagh & Co., Surbiton Hill, S.W.	8,589	0	0
C. W. Killingback & Co., Camden Town	8,569	0	0
T. Free & Sons, Maidenhead	8,540	0	0
C. E. Rayner, Croydon	8,372	0	0
E. Iles, jun., Wimbledon	7,401	0	0
E. Cooke & Co. London, S W. ..	7,326	0	0
Peerless, Dennis & Co., Eastbourne	7,175	0	0
J. B. Potter,* Carshalton Road, Sutton	6,366	5	2
Streeters & Todhunter,† Godalming	6 125	0	5

[Engineer's estimate, £749[illegible] [illegible]s. 7d.]
* Accepted. † Informal.

Dartford.—For internal iron fencing and gates at Joyce Green Hospital, Dartford, Kent, for the Metropolitan Asylums Board. Messrs. A. & C. Harston, architects, 15 Leadenhall Street, E.C. :—

	£	s.	d.
Motley & Green	£3,526	16	0
W. Hayward & Sons, Ltd...	2,370	0	0
Wenham & Waters, Ltd.	2,352	0	0
Rowell & Co.	2,199	10	0
Bayliss, Jones & Bayliss, Ltd.	2,156	11	3
J. Priest & Sons, Ltd.	2,100	0	0
Rowland Brothers	2,047	0	0
Morton & Co, Ltd.	1,950	0	0
S. Webb	1,867	9	9
Hill & Smith	1,860	16	0
Dudley Art Metal Co...	1,840	5	0
W. Bain & Co.	1,798	10	10
Miller & Sons..	1,798	0	0
E. J. Raybould	1,697	10	10
J. Elwell	1,682	7	6
B. C. Barton	1,660	0	0
A. E. Wood,* Arabin Road, Brockley	1,535	10	0

* Accepted.

Great Yarmouth.—For the erection of new fishing premises, South Denes, Great Yarmouth, for Mr. R. G. Westmacott. Messrs. Olley & Haward, architects, 5 Queen Street, Great Yarmouth :—

	£	s.
Moore & Sons	£1,960	0
G. E. Hawes, Norwich	1,860	0
F. Grimble	1,830	0
Carter & Wright	1,769	0
J. Ward	1,7 0	0
A. Gunns	1 694	0
G. W. Beech..	1,665	0
W. H. Everitt	1,600	0
S. & F. Smith	1,531	0
A. Wright	1,520	0
J. E. Pestell,* 8 York Road	1,191	10

* Accepted. [Rest of Great Yarmouth.]

Great Yarmouth.—For alteration of boundary walling, removal and re-erection of children's offices, &c, at Northgate School, Great Yarmouth, for the Great Yarmouth School Board. Messrs. Olley & Haward, architects, Queen Street, Great Yarmouth : –

	£	s.
A. Gunns	£1,329	10
J. D. Harman	1,260	0
J. Read	1,241	0
G. W. Beech..	1,222	0
J. Ward	1,208	10
J. N. Dawson	1,162	0
J. Rand	1,142	0
J. Leggett,* 36 Dean Side..	1,137	0

* Accepted. [Rest of Great Yarmouth.]

Holt (Norfolk).—For the construction of about one mile of stoneware pipes, manholes, ventilating shafts, grit chambers, tanks and filters and other works in connection with the sewerage and sewage-disposal of Holt, Norfolk, for the Erpingham Rural District Council. Mr. T. Inglis Goldie, engineer, Bank Buildings, Bank Plain, Norwich :—

	£	s.	d.
Greengrass, Norwich	£2,246	13	6
Weston, Sheringham	1,831	16	0
Baker, Holt	1,734	18	0
Bradshaw,* London	1,669	4	8
Edwards, Norwich	1,666	10	5

* Accepted.

Horfield (Bristol).—For the erection of a branch bank, for the directors of the National Provincial Bank of England, Ltd., at Horfield, Bristol. Messrs. Walter S. Paul & James, AA.R.I.B.A., architects and surveyors, Eagle Insurance Buildings, Baldwin Street, Bristol. Quantities by the architects :—

	£
E. Clarke	£1,435
W. Long & Son, Bath	3,310
G. Humphreys	3,307
A. Dowling	3,199
W. & J. Bennett..	3,150
G. Downs	3,135
J. Perkins & Son	3,121
F. Chown,* Wellington Road, Bristol ..	3,080

* Accepted.

Littlehampton.—For the construction and completion of underground public conveniences on the Green, near Esplanade, Littlehampton, for the Littlehampton Urban District Council. Mr H. Howard, F.S.I, surveyor :—

	£
A. Longhurst, Chichester	£1,4 7
G. Jennings, Ltd., London	1,350
A. Burrell	1,349
Snewin Brothers	1,3 3
W. Wallis	1, 77
Linfield & Sons*	1,197

* Accepted. [Rest of Littlehampton.]

Liverpool.—For the erection of new temporary school (accommodation, 554), Broad Green Road, for Liverpool School Board. Mr. Thomas Brown, architect :—

	£	s.	d.
Patterson & Co.	£2,737	0	0
Morton & Co., Ltd.	2,565	0	0
Hawkins & Co.	2,548	10	0
Tomkinson & Co.	2, 45	0	0
G. Johnson	2,460	0	0
J. Readdie	2,440	0	0
Humphreys, Ltd.	2,368	0	0
Woods & Son..	2 27	0	0
Blakeley & Co.	1,934	0	8
Whitnall & Gregory*	1, 77	0	0

* Accepted

London.—For the erection of a school for mentally defective children in Cormont Road, for the London School Board. T. J. Bailey, Board's architect :—

	£
J. Smith & Sons, Ltd.	£3 452
Holliday & Greenwood, Ltd.	3 353
F. & H. F. Higgs	3,254
Holloway Brothers (London), Ltd.	3,137
W. Akers & Co.	3,129
W. Smith & Son	3,093
Lathey Brothers	3,063
W. Downs	2,982
W. Johnson & Co., Ltd.	2,9 6
E. Triggs	2,910
J. & C. Bowyer	2,887
W. J. Mitchell & Son	2,865
T. D. Leng	2,830
J. Garrett & Son	2,817
J. Marsland & Sons	2,803
Rice & Son	2,799
E. P. Bulled & Co *	2,795

* Recommended for acceptance.

London.—For improvements at the Netley Street School, for the London School Board. Mr. T. J Bailey, Board's architect :—

	£	s.
J. Simpson & Son	£4,764	0
C. Cox	4 640	0
C. Miskin & Sons	4 617	0
Johnson & Co.	4,600	13
C. Dearing & Son	4, 48	6
Unsigned	4,530	0
J. Grover & Son	4,422	0
E. Lawrence & Sons..	4,232	0
McCormick & Sons	4,108	0
W. King & Son	4,027	0
E. Triggs	3,946	0
Treasure & Son	3,855	0
H. Wall & Co.*	3,76[illegible]	0

* Recommended for acceptance.

London, N.—For the erection of a new police station at Muswell Hill. Mr. J. Dixon Butler, surveyor to the Metropolitan Police, New Scotland Yard Quantities by Messrs. Thurgood, Son & Chidgey, Charing Cross Chambers, Duke Street, Adelphi :—

	£
Voller & Goodfellow	£9,660
Lascelles & Co...	9,186
Higgs & Hill	9,140
Allen & Sons	9,121
J. Darvill	9,120
F. & H. F. Higgs	9,033
Grover & Sons	8,964
Ansell	8,905
Holloway Brothers	8,897
Thompson & Beveridge..	8,796
Lathey Brothers	8,737
J. Pocock	8,629
Willmott & Sons	8,279

London, S.W.—For Chelsea Workhouse extension, for the Guardians. Messrs. Lansdell & Harrison, architects, 66, Basinghall Street, E.C. :—

	£
W. Willett	£44,209
Foster & Dicksee	39,986
Leslie & Co., Ltd.	39,008
Gray, Hill & Co.	38,175
Johnson & Co...	3 ,926
Godson & Sons	37,900
H. L. Holloway, Deptford	37,000
Pattison & Sons	36,963
Kirk & Randall, Woolwich	36,765
Kellett & Sons, Ltd.	36,657
F. G. Minter	36,631
Smith & Sons	36 594
J & M. Patrick	36,590
C. F. Kearley	36,550
Holloway Brothers	36,400
J. Greenwood, Ltd.	36,364
G. Parker	36,097
Kingerlee & Son, Oxford	36,087
Shillitoe & Son, Bury St. Edmunds ..	36,000
W. Lawrence & Sons, Waltham Cross ..	35,769
B. E. Nightingale	35,748
Edwards & Medway	35,400
W. Wallis	34,919
A. E. Symes	33,450
King & Sons	33,275
Patman & Fotheringham	33,125
C. Wall,* Upcerne Road Chelsea	32,825

* Accepted. [Rest of London.]

Long Reach.—For extension of pier-head buildings at Long Reach, for the Metropolitan Asylums Board :—

W. C. Reeder & Co., London, E.C.	£3,968	0	0
A. Fasey & Son, Leytonstone	3,504	17	4
J. Shelbourne & Co., London, E.C.	2,684	0	0
Ennes Brothers,* Erith	2,622	13	4

[Engineer's revised estimate, £2,755.]
* Accepted.

Newton Abbot (Devon).—For the erection of casual wards, &c., at the workhouse, for the Guardians. Mr. Samuel Segar, F.I.A.S., architect, Newton Abbot Quantities by the architect :—

W. Brenton, Newton Abbot and Torquay	£3,347	0	0
L. Bearne	3,025	0	0
H. Drew, Paignton	2,997	0	0
Parker Brothers	2,990	0	0
R. Yeo & Sons, Torquay	2,954	8	5
F. A. A. Stacey	2,950	0	0
G. Hicks	2,895	13	0
M. Bridgman, Paignton	2,890	0	0
F. Zealley*	2,796	0	0

* Accepted. [Rest of Newton Abbot]

Minworth and Curdworth (near Birmingham).—For Minworth and Curdworth sewerage works. Messrs. Willcox & Raikes, engineers, Union Chambers, 63, Temple Row, Birmingham :—

	Minworth.			Curdworth.		
H. Law, Erdington	£3,700	0	0	£2,165	0	0
J. Hodson & Sons, Nottingham	2,880	0	0	1,677	13	8
A. Heaps, Birmingham	2,604	8	1	1,527	15	8
Johnson & Langley, Leicester	2,415	3	8	1,485	8	0
Currall, Lewis & Martin, Birmingham	2,427	0	0	1,423	0	0
C Chamberlain, Leicester	2,389	7	0	1,297	0	0
R. W. Barker, Harrogate	2,310	0	0	1 310	0	0
A Kellett & Sons, Northfield	2,251	1	5	1,289	13	6
A. Jewell, Market Harborough	2,150	0	0	1,358	0	0
D. H. Porter, London	-			1,249	0	0
J. Mackay, Smethwick	2,138	14	1	1,262	12	0
R. W. Fitzmaurice, Birmingham	2,129	0	0	1 244	0	0
I. Langley,* Tyburn	1,998	0	0	1,227	0	0
W. L. Meredith & Co., Lydney	1,915	9	10	1,201	8	0
J. Holme, Leicester	1,861	4	0	1,155	0	0

* Accepted.

Sedgley.—For the erection of a new school for 350 girls, cookery and laundry centre, woodwork centre, caretaker's house, levelling site, playgrounds, drains, fences, out-buildings, and alterations to existing schools, Mount Pleasant, for the Sedgley School Board. Mr. S. H. Eachus, architect, Wolverhampton :—

Hunt Brothers. Birmingham	£10,733	17	2
Holder, Wolverhampton	10,445	0	0
Ham, Wolverhampton	9,540	0	0
L. Jones, Wolverhampton	9,478	0	0
G. A. Horton, Brierley Hill	9,182	0	0
Hilton & Caswell, Sedgley	9,100	0	0
Mallin, West Bromwich	8,999	0	0
M. Round, Dudley	8,964	0	0
Dallow, Blackheath, Birmingham	8,760	0	0
Willcock & Co., Wolverhampton	8,750	0	0
Speake & Sons, Wolverhampton	8,749	0	0
Tooby, Wolverhampton	8,698	0	0
Oakley & Coulson, Dudley	8,685	0	0
Herbert, Wolverhampton	8,586	0	0
Gough,* Dudley Road, Wolverhampton	8,390	0	0

* Accepted.

Westhoughton (Lancs).—For the construction of about 3,400 lineal yards of 12in. stoneware pipe sewer, partly in Over Hulton and partly in Westhoughton, for the Westhoughton Urban District Council. Mr. Thomas Partington, surveyor :—

W. Winnard, Wigan	£3,813	5	8
J. Wood, Tyldesley, near Manchester	3,173	9	6
T. Rowland, Northwich	3,126	16	0
E. Yates, Horwich	2,800	0	0
Etheridge & Clarke, Manchester	2,639	4	3
R. Hawley, Manchester	2,519	16	3
S. Cowburn & Sons, Hindley	2,418	13	0
H. & F. Lomax, Hindley	2,422	0	0
P. Heyes, Bolton	2 355	4	6
C. Musker Brothers, Swinton	2,320	0	0
S. Johnson & Son, Manchester	2,248	14	4
J. Moore, Rochdale	2 214	7	6
W. Pollitt & Co., Ltd , Bolton	2,180	3	3
T. Jackman, jun., Chorley	2,017	6	3
J. Horrocks, Westhoughton	1,967	4	6
P. O'Maha, Chorley	1,923	19	7
T. Kilburn,* 46, Arrowsmith Terrace, Bolton	1.859	10	3

*. Accepted.

[*Continued on p.* xii]

Coming Events.

Wednesday March 18.

EDINBURGH ARCHITECTURAL ASSOCIATION (Associates' Section).—Mr. W. Davidson on "Church Decoration," 8 p.m.

INSTITUTION OF CIVIL ENGINEERS. — Students' Visit to the Generating Station of the Central Electric Supply Co., Ltd., Lodge Place, Grove Road, N.W., at 2.30 p.m.

Thursday, March 19.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Technical Demonstation in Oil Painting, Gilding, Varnishing, Wallpaper and Damp Walls, at Messrs. J. F. Keatinge & Sons, 42, Grafton Street, Dublin, at 4 p.m.

SOCIETY OF ARCHITECTS.—Mr. B. R. Tucker, M.S.A., M.S.I., on "Ventilation and Warming," 8 p.m.

Friday, March 20.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Mr. John McKim on "The Glasgow Mode of Measurement," 8 p.m.

ART WORKERS' GUILD.—Lecture on "Modern Arts and Crafts Movement in Holland," 8 p.m.

ARCHITECTURAL ASSOCIATION. — Mr. W. Henry White on "Ancient and Modern Town Houses," 7.30 p.m.

INSTITUTION OF MECHANICAL ENGINEERS. — Mr. James Rowan on "A Premium System applied to Engineering Works," 8 p.m.

Saturday, March 21.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE SCIENTIFIC SOCIETY. Mr. Robert Baillie M.I.N.A., on "Stirling Water-Tube Boilers," 7.30 p m

ARCHITECTURAL ASSOCIATION. — Fourth Spring Visit.

Monday, March. 23.

SURVEYORS' INSTITUTION.—Mr. J. L. Crouch on "The Rating of Brickfields," 8 p.m.

ULSTER SOCIETY OF ARCHITECTS' DESIGNING AND SKETCHING CLUB.—Mr. F. E. Ward on "The Art and Craft of Lead Glazing," 8 p.m.

Tuesday, March 24.

MANCHESTER SOCIETY OF ARCHITECTS (Students' Meeting).—Mr. J. H. Somerset on "Ancient Roman Construction."

Wednesday, March 25.

SOCIETY OF ARCHITECTS. Mr Arthur Kitson on "Oil Lighting by Incandescence," 8 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION. — Mr. A. Hunter Crawford on "The Building of a House"—IV., 8 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Lecture by Mr. R. P. S. Twizell, A.R.I.B.A., at 7.30 p.m.

"CLOISONNE GLASS"
A new decorative material transparent and opaque.
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Awarded First Prize Medal, Adelaide Jubilee Exhibition, 1887, and Sydney Centenary Exhibition, 1888.
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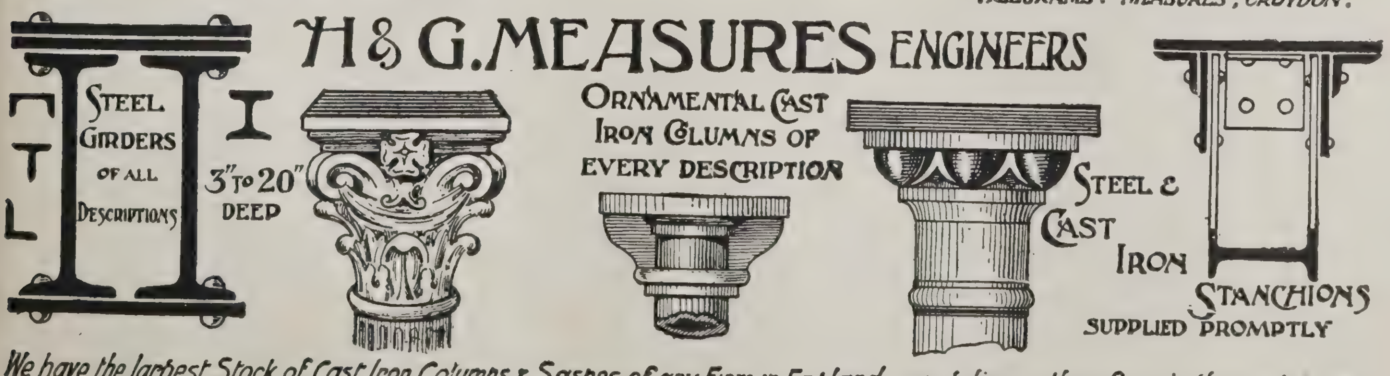

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STEEL GIRDERS OF ALL DESCRIPTIONS 3" TO 20" DEEP
ORNAMENTAL CAST IRON COLUMNS OF EVERY DESCRIPTION
STEEL & CAST IRON STANCHIONS SUPPLIED PROMPTLY
We have the largest Stock of Cast Iron Columns & Sashes of any Firm in England, our delivery therefore is the quickest.

TENDERS (*cont. from* p. 78).

Bristol.—For the erection of a new shop and premises on the New Clifton Estate, Redland, for the Grocers' Alliance. Mr. Thomas Scammell, architect, 1 St. Stephen's Street, Bristol:—

W. Church	£3,076
A. E. Denby & Co.	3,038
G. Humphreys	2.930
A. Dowling	2,898
Jones & Hill	2,839
J. Perkins & Son	2,820
A. T. Beaven	2,743
E. Love	2,724
Wilkins & Gosling	2,653
T. R. Lewis*	2,606

* Accepted. [All of Bristol.]

Ipswich. For alterations to Hope House Orphanage. Messrs. William Eade, F.R.I.B.A., and Edwin Thomas Johns, architects, Ipswich:—

C. Stearn & Co.	£1,345 0
S. A. Kenney	1,155 0
C. A. Green	1,069 13
M. Death	1,050 0
A. Sadler	998 0
G. Grimwood & Sons	993 0
F. Bennett	980 0
W. H. Death	929 10
T. Parkington & Son	900 0
H. J. Linzell	895 0
C. Roper*	859 10

* Accepted.

Stow (Suffolk).—For additions to Stow Union Workhouse. Mr. John S. Corder, architect, Wimborne House Ipswich:—

Builder.	Section A.	B.	C.	D.	E.	Total.	Alternative oak floor.
Shillitoe & Son	£975 0	£3,810 0	£1,180 0	£590 0	£440 0	£6,995 0	£5 0
V. Marriott	875 0	3,840 0	1,120 0	480 0	560 0	6,875 0	3 10
Scales & Robins	914 11	3,761 15	1,120 5	519 18	545 15	6,862 4	4 0
T. Parkington & Son	885 0	3,485 0	1,185 0	485 0	485 0	6,525 0	4 4
E. Death	820 0	3,520 0	1,060 0	417 0	633 0	6,450 0	1 16
Linzell	820 0	3,367 0	1,120 0	475 0	485 0	6,267 0	4 0
A. Plummer	785 8	3,216 5	1,203 19	516 0	533 18	6 255 0	4 12
C. Stern	753 10	3,455 13	962 0	438 18	570 19	6,181 0	5 10
F. Thurman	764 13	3,359 17	1,095 13	479 16	461 10	6,161 10	1 15
F. Bennett	781 2	3,434 0	997 10	431 15	507 13	6,155 7	3 10
E. West	—	—	—	—	—	6,1[illegible]0 0	4 0
H. Gladwell	971 5	3,195 17	978 10	396 10	449 13	5 990 15	4 15
G. Grimwood & Sons, Ipswich	751 17	3,306 0	960 0	418 0	489 3	5,925 0	4 0
Murray & Sherwin	712 0	3,343 5	913 17	399 15	529 3	5,898 0	2 15
Theobald & Son	738 3	3,145 2	926 3	440 9	581 12	5,831 12	2 12
Trew	827 0	2,877 0	1,127 0	489 0	337 0	5 657 0	3 0
Potter	735 0	3,050 0	955 0	450 0	455 0	5,645 0	1 8
C. Roper,* Ipswich	704 0	2,981 0	877 0	412 0	409 0	5,383 0	2 10

* Provisionally accepted.

Stokenchurch.—For the erection of a new residence, Stokenchurch, for Mr. R. D. Cruikshank. Mr. Arthur Vernon, P.S.I., architect, 29, Cockspur Street, London, S.W., and High Wycombe:—

G. Syned	£1,[illegible]65 10
W. H. Siarey	1,167 0
H. Harris*	1,088 10

* Accepted.

Tring.—For sewage-disposal works. Messrs. Willcox & Raikes, engineers, 63, Temple Row, Birmingham:—

W. Morley & Sons, Keighley	£2,674 12 8
Bower Brothers, Nottingham	2,139 14 0
E. Smith & Son, Tring	1,949 0 0
C. Ford, Harlesden	1,937 0 0
H. Williams, Harpenden	1,925 0 0
Green & Co., Aylesbury	1,747 0 0
Yirrell & Co., Leighton Buzzard	1,727 0 0
T. Vale, Stourport	1,727 0 0
Siddons & Freeman,* Oundle	1,600 0 0

* Accepted.

A New Congregational Church at Durban is to be erected, the feature of which will be a spire about 100ft. high, and probably it will be the only church in Natal with a masonry spire The cost of the building, which will be richly treated in the interior, is to be about £5,000.

Complete List of Contracts Open.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	BUILDING:		
March 19	Acton Manor, Birmingham—Bricks, &c.	Urban District Council	G. H. Jack, Surveyor. Council House, Aston Manor.
" 19	Halifax—Residence	—	R. Berry, Architect, Commercial Street, Halifax.
" 19	Wisborough Green—Alterations to Inn	King & Sons, Ltd.	C. H. Burstow, 6 West Street, Horsham.
" 19	Norwich—Workmen's Dwellings	Corporation	A. E. Collins City Engineer, Norwich.
" 19	Bridlington—Hospital	Corporation	A. E. Matthewman, Town Clerk, Town Hall, Bridlington.
" 19	Limerick—Convent and Chapel	—	B. E. F. Sheehy, 57 George Street, Limerick.
" 19	Longhope, Orkney—Custom House	Commnrs. of H.M. Works, &c.	H.M. Office of Works, Edinburgh
" 19	Mumby, near Alford, Lincs—Church Restoration	—	C. H. Fowler. Architect. The College, Durham.
" 20	Whitby—Alterations in Workhouse	Guardians	W. S. Gray, 38 Flowergate, Whitby.
" 20	Bournemouth—Enlargement of Post Office	Commnrs. of H.M. Works, &c.	Secretary H.M. Office of Works, Storey's Gate, S W.
" 20	Kendal—3 Houses	Mrs. Bryce	S. Shaw, Architect, Kendal.
" 20	Knutsford—Brick Gasholder Tank, &c.	Light and Water Company	T. Newbigging & Son. 5 Norfolk Street, Manchester.
" 20	Mansfield—House and Shop	J. W. Lane	J. H. K. Fisher. Architect. Cresswell, near Mansfield.
" 21	Burnley—Bricks, &c.	Highways & Sewage Committee	G. H. Pickles, Borough Surveyor Town Hall, Burnley.
" 21	Manchester—Urinal Stall	Sanitary Committee	City Surveyor, Town Hall, Manchester.
" 21	Hartlepool—Library	Corporation	H. C. Crummack, Borough Engnr., Borough Buildings, Hartlepool.
" 21	Langum—Chapel	—	Rev. W. Davies, Rosedale, Langum.
" 21	Lythe Hall, near Whitby—Alterations	—	R. Lofthouse & Sons, 62 Albert Road, Middlesbrough.
" 21	Penzance—Villa	J. V. Thomas	O. Caldwell, Architect, Victoria Square, Penzance.
" 21	Pontardawe—10 Cottages, Business Premises, &c.	—	D J. Michael, 5 Herbert Street, Pontardawe.
" 21	Prestwich, Lancs—21 Cottages	Co-op. & Industrial Soc., Ltd.	Society's Office, Warwick Street, Prestwich.
" 21	Stoney Stanton—Shop, Stores, Public Hall, &c.	Co-operative Society, Ltd.	H. Carpenter, 7 Humberstone Gate, Leicester.
" 21	Warminster, Wilts—12 Cottages	Dr. C. Alcock	A. F. Long, 53 Market Place Warminster.
" 21	Waterloo, near Liverpool—Lavatory, Shelter, &c.	Urban District Council	F. S. Yates, Surveyor, Town Hall, Waterloo.
" 21	Sparkhill, near Birmingham—Bricks, &c.	Yardley Rural District Council	A. W. Smith, Surveyor, Council House, Sparkhill.
" 21	Lampeter—Assembly Rooms	—	Ll. Banks-Price, 28 High Street, Lampeter.
" 21	Manchester—Lavatory	Sanitary Committee	City Surveyor, Town Hall, Manchester.
" 21	West Auckland—Church and School	—	G. Race, Architect, Westgate, Weardale.
" 22	Cork—House	W. Lee	96 Patrick Street, Cork.
" 22	Moylgrove, Wales—Farm Buildings	—	J. M. Philipps, Treriffith.
" 23	Drogheda, Ireland—Additions, &c., to House	A. B. Cairnes	F. Shaw, Architect, Drogheda.
" 23	Drogheda, Ireland—Kiln, &c.	C. B. & D. Breweries Co., Ltd.	F. Shaw, Architect, Drogheda.
" 23	Glasgow—Central Office	Corporation	Office of Public Works, City Chambers, 64 Cochrance St., Glasgow.
" 23	Tipton—Fire-Clay Goods	Urban District Council	S. O. Stephenson, Engineer, Gasworks.
" 23	Wrexham—Shed	Town Council	Borough Surveyor, Wrexham.
" 23	North Burton - Re-building Inn	—	D. Petch, Victoria Chambers, Huntriss Row, Scarborough.
" 24	Tredegar—School	School Board	James & Morgan, Architects, Charles Street Chambers, Cardiff.
" 24	Ilford, Essex—Crematorium	Burial Board of City of London	Engineer, Guildhall.
" 24	Manchester—Retaining Wall, &c.	Improvement & Bldgs. Committee	City Surveyor, Town Hall, Manchester.
" 24	Patricroft, Lancs—Additions to Offices	Barton-upon-Irwell Guardians	Hurrell & Taylor. Brazennose Street, Manchester.
" 24	Taunton—Farmhouse	T. Starkey	J. H. Burston, Railway Hotel, Stogumber, Taunton.
" 24	Walthamstow -Kiosk	Urban District Council	G. W. Holmes, Engineer, Town Hall, Walthamstow.
" 25	Cobham, near Gravesend, Kent—Infectious Diseases Hospital	Strood Rural District Council	E. G. Page. 4 and 5 Warwick Court, Gray's Inn, W C.
" 25	Hove. Sussex—Wall, &c.	Town Council	H. H. Scott, Borough Surveyor, Hove, Sussex.
" 25	Pengam, Wales—25 Houses	Fleur-de-Lys Bldg. Club (No. 3)	G. Kenshole, Architect. Station Road, Bargoed.
" 25	Strood, Kent—Infectious Diseases Hospital	Rural District Council	E. G. Page, 4 and 5 Warwick Court. Gray's Inn, W.C.
" 25	Houghton, near Winchester—3 Cottages	St. John's Hospital Trustees	T. Stopher, 57 High Street, Winchester.
" 25	Warminster—Covering in Market House		Longleat Estate Office, Warminster.
" 25	Watford—Additions to Electric Light Station	Urban District Council	D. Waterhouse, 14 High Street, Watford.
" 25	Caterham, Surrey—Additions to Asylum	Metropolitan Asylums Board	F. D. Mann. Clerk, Board's Office, Embankment. E.C.
" 26	Clones—Post Office	—	H. Williams, Secretary, Office of Public Works, Dublin.
" 26	Brighouse—Chancel, &c.	—	C. H. Fowler, Architect, The College, Durham.
" 26	Chester—Lavatories	Corporation	City Surveyor, Town Hall. Chester.
" 26	Downpatrick Alterations to Kitchen, &c.	Asylum Committee	Graeme-Watt & Tulloch. 77A Victoria Street, Belfast.
" 31	Smethwick—Bricks, &c.	Corporation	C. J. F. Allin. Borough Surveyor, Town Hall, Smethwick.
" 31	Alnwick—Malthouse	J. P. Simpson & Co.	Brewill & Baily, 44 Parliament Street, Nottingham.
April 2	London, S.E.—Alterations, &c.	Southwark Union Guardians	G. D. Stevenson, 13 and 14 King Street, Cheapside, E C.
	ENGINEERING		
March 19	Croydon—Steam Roller	Rural District Council	E. J. Gowen, Clerk, Town Hall, Croydon.
" 19	London, N.—Water Condenser, &c.	St Mary (Islington) Guardians	J. Enright, 47 Victoria Street, S.W.
" 20	Heckmondwike—Electrical Plant	Electric Lighting Committee	G. H. Carter, Engineer, Power Station. Heckmondwike.
" 20	Aberdare—Gasholder	Gas Committee	J. Carr, Consulting Engineer, Farnworth, Widnes.
" 20	Dewsbury—Engineering. &c., Work	Corporation	H. Dearden, Borough Engineer, Town Hall, Dewsbury.
" 20	Darlington—Motor Cars, &c.	Corporation	H. G. Steavenson, Town Clerk, Darlington.
" 20	Barking, Essex—Light Railway Materials	Urban District Council	W. C. C. Hawtayne, 9 Queen Street Place, E.C.
" 21	Wrexham—Electrical Stores	Town Council	Borough Electrical Engineer, Wrexham.
" 21	Conway—Water-Mains	Sanitary and General Purposes Committee.	Borough Surveyor, Town Hall, Conway.
21	Fenton—Four Purifiers	Gas Committee	R. Surtees, Engineer, Gasworks, Fenton
23	Leeds—Meters	Gas Committee	R. H. Townsley, General Manager, Gas Department, Municipal Buildings, Leeds.
23	Devonport, Engine, &c.	Gas Committee	S. E. Stevenson, Engineer Gasworks. Devonport.
" 23	Dublin—Dredger	Port and Docks Board	J. P. Griffith, Engineer, East Wall, Dublin.
" 23	Margate—Tank	Waterworks Committee	A. Latham, 15 Cecil Square, Margate.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
		ENGINEERING—*cont.*		
March	23	Shardlow, Derbyshire—Water-Supply Works	Parish Council	J. Sheldon, Engineer, Darley House, Long Eaton.
"	23	Witham, Essex—Water Supply	Urban District Council	F. S. Courtney, 25 Victoria Street, Westminster.
"	24	London, N.W.—Cables	St Pancras Borough Council	Electricity Department Offices, 57 Pratt Street, N.W.
"	24	Swindon—Switches, &c	Corporation	J. G. Griffin, Electricity Works, Swindon.
"	24	London, S W.—Penstocks	London County Council	Engineer's Department, County Hall, Spring Gardens, S.W.
"	24	Manchester—Reconstructing Bridge	Improvement and Buildings Committee.	City Surveyor, Town Hall, Manchester.
"	24	Morpeth—Heating Apparatus	——	J. Elliott, Newgate Street, Morpeth.
"	24	Rhymney, Wales—Sinking Pits	Iron Co., Ltd.	Offices, Rhymney.
"	25	Milnrow Lancs—Bacteria Filters, &c.	Urban District Council	J Diggle, Civil Engineer, Hind Hill Street, Heywood.
"	25	London, S.W.—Launch	Admiralty	Secretary, Admiralty, Ship Branch, S.W.
"	27	Sunderland—Electric Cables, &c.	Corporation	J. F. C. Snell, Borough Electrical Engineer, Town Hall, Sunderland
"	27	Sunderland—Fuel Economiser	Corporation	J. F. C. Snell, Borough Electrical Engineer, Town Hall, Sunderland
"	27	Sunderland—Two Boilers	Corporation	J. F. C. Snell, Borough Electrical Engineer, Town Hall, Sunderland
"	28	Wednesbury—Motor-Generators, &c.	Mayor, Aldermen and Burgesses	F. J. Warden-Stevens, 34 Victoria Street, Westminster.
"	28	Welwyn, Herts—Sinking Well	Rural District Council	R. E. Middleton, 17 Victoria Street, S.W.
"	30	Bury Lancs—Boilers, &c.	Electricity Committee	S. J. Watson, Engineer, Electricity Works, Bury.
"	30	Cardiff—Two Steel Swingbridges	Cardiff Railway Co.	G. N. Abernethy, 4 Delahay Street, Westminster.
"	30	Glasgow—Boring, &c.	Clyde Navigation Trustees	W. M. Alston, 16 Robertson Street, Glasgow.
"	30	New Shoreham, Sussex—Main Laying	Steyning West R.D.C.	F. Slaughter, Engineer, West Street, New Shoreham.
"	30	Wolverhampton—Tramways	Tramways Committee	Borough Engineer, Town Hall, Wolverhampton.
"	31	Wyke Regis, Dorset—Sewerage Works	Weymouth R.D.C.	Lemon & Blizard, Engineers, Castle Lane, Southampton.
"	31	Bridgend, Glamorgan—Electrical Apparatus	Urban District Council	T. J. Hughes, Clerk, Council Offices, Bridgend.
"	31	London, S.W.—Travelling Cranes	London County Council	County Hall, Spring Gardens S.W.
April	1	London, S.E.—Escape Staircases	St. Giles' (Camberwell) Guardians	A. E. Mullins, 48 Peckham Road, Camberwell, S.E.
"	8	Oswestry—Removing Weeds, &c.	——	M. B. Lawford Clerk, Upper Brook Street, Oswestry.
"	9	Colwyn Bay—Foreshore Improvements	Urban District Council	W. Jones, Engineer, Council Offices, Colwyn Bay, North Wales.
May	2	Central Australia—Railway	South Australian Government	Agent-General for South Australia, London.
July	1	Rangoon—Electric Supply Undertaking	Municipal Committee	Ogilvy, Gillanders & Co., 67 Cornhill, E.C.
		IRON AND STEEL:		
March	19	Manchester—Cast-iron Pipes	Gas Committee	C. Nickson, Superintendent, Gas Dept., Town Hall, Manchester.
"	19	Aston Manor, Birmingham—Stores	Urban District Council	G. H. Jack, Engineer, Council House, Aston Manor.
"	20	Brazil—Iron and Steel	Central Railway	Commercial Intelligence Branch of Board of Trade, 50 Parliament Street, S.W.
"	21	Wrexham—Tools and Ironmongery	Town Council	Borough Surveyor, Wrexham.
"	21	Burnley—Ironwork	Highways and Sewage Committee	G. H. Pickles, Borough Surveyor, Town Hall, Burnley.
"	21	Nottingham Stores	Tramways Committee	J. Aldworth, 57 Long Row, Nottingham.
"	21	Sparkhill, near Birmingham—Iron and Ironmongery	Yardley R.D.C.	A. W. Smith, Surveyor, Council House, Sparkhill, near Birmingham.
"	23	Bolton, Lancs—Stores	Waterworks Committee	Mr. Swindlehurst, Waterworks Engineer, Town Hall, Bolton.
"	23	Carlisle—Iron Roofs	Gas Committee	W. J. Smith, Engineer, Gasworks, Carlisle.
"	23	Blackburn—Iron Castings, &c.	Corporation	A. S. Giles, Electrical Engineer, Electricity Works, Blackburn.
"	23	Wombwell, Yorks—Stores	Urban District Council	J. Robinson, Clerk, Council Office, Wombwell.
"	24	Walthamstow—Rails	Urban District Council	G. W. Holmes, Engineer, Town Hall, Walthamstow.
"	24	Ilford—Tools, Castings, &c.	Urban District Council	J. W. Beaton, Clerk, Public Offices, Ilford.
"	24	London, E.C.—Stores	South Indian Rly. Co, Ltd.	Company's Offices, 55 Gracechurch Street, E.C.
"	25	Dorchester—Ironmongery, Tools, &c.	Town Council	Borough Surveyor, Dorchester.
"	25	Leek, Staffs—Stores	Urban District Council	C. C. Brown, Surveyor, Town Hall, Leek.
"	28	Waterloo, Lancs—Stores, &c	Urban District Council	F. S. Yates, Surveyor, Town Hall, Waterloo.
"	28	Willenhall, Staffs—Stores	Urban District Council	T. E. Fellows, Surveyor, Town Hall, Willenhall
"	30	New Shoreham—Cast-iron Pipes	Steyning West R.D.C.	F. Slaughter, Engineer, West Street, New Shoreham.
"	30	Aberdeen—Permanent-Way Materials	Harbour Commissioners	R. G. Nicol, Engineer, Harbour Engineer's Office, Aberdeen.
"	31	Smethwick—Stores	Corporation	C. J. F. Allin, Borough Surveyor, Town Hall, Smethwick.
"	31	London, E C.—Steel Axles, &c.	Southern Mahratta Rly. Co., Ltd.	E. Z. Thornton, 46 Queen Anne's Gate, Westminster.
"	31	Christiania—Wire &c	——	Line Manager, State Railways, Christiania.
"	31	Hamilton, Scotland—Tools, &c.	——	J. Watson, Road Surveyor, Strathaven.
June	15	Bangkok, Siam—Permanent-way Materials	Royal Siamese State Railways	Director-General Gehots, Bangkok.
"	15	Bangkok, Siam—Railway Stores	Royal Siamese State Railways	Siamese Legation, London.
		PAINTING AND PLUMBING:		
March	19	Newcastle-upon-Tyne—Painting, &c.	Home for Incurables Committee	City Property Surveyor, Town Hall, Newcastle-upon-Tyne.
"	21	Sparkhill, near Birmingham—Paints, Oils, &c.	Yardley R.D.C.	A. W. Smith, Engineer, Council House, Sparkhill, near Birminghm
"	21	Wrexham—Oils, Paints, &c.	Town Council	Borough Surveyor, Wrexham.
"	23	Bolton, Lancs—Paint, Oil, &c.	Waterworks Committee	Mr. Swindlehurst, Waterworks Engineer, Town Hall, Bolton.
"	23	Blackburn—Brushes, Paints, Oils, &c.	Corporation	A. S. Giles, Electrical Engineer, Electricity Works, Blackburn.
"	23	Wombwell, Yorks—Lead Pipes, Paint, Oil, &c.	Urban District Council	J. Robinson, Clerk, Council Offices, Wombwell.
"	24	London, N.W.—Cleaning and Painting	St. Pancras Borough Council	Electricity Department Offices, 57 Pratt St., Camden Town, N.W.
"	30	Canterbury—Painting, &c.	Guardians	J. Plummer 38 St. Margaret's Street, Canterbury.
		ROADS AND CARTAGE:		
March	19	Berwick—Road Works	Rural District Council	Mr. Short, District Surveyor, Ord Cottage, Berwick.
"	19	Fenton—Granite	Urban District Council	S. A. Goodall, Surveyor, Town Hall, Fenton.
"	19	Morley—Materials	Corporation	W. E. Putman, Borough Surveyor, Town Hall, Morley.
"	19	Pentre, Wales—Road Macadam	Rhondda U.D.C.	W. J. Jones, Surveyor, Council Offices, Pentre.
"	19	Aston Manor, Birmingham—Materials	Urban District Council	G. H. Jack, Surveyor, Council House, Aston Monor.
"	20	Eastbourne—Road Materials	Rural District Council	C. M. Carter, District Surveyor, Down View, Polegate, Sussex.
"	20	Hull—Stone	Corporation	A. E. White, City Engineer, Town Hall, Hull.
"	20	Rothwell, near Leeds—Materials	Urban District Council	J. T. Pears, Surveyor Council Offices Rothwell.
"	20	Nelson, Lancs—Materials	Plans and Buildings Committee	B. Ball, Borough Surveyor, Town Hall, Nelson.
"	20	Brighton—Granite Kerb and Channel	Town Council	F. J. C. May, Borough Surveyor, Town Hall, Brighton.
"	20	Chester-le-Street—Materials	Rural District Council	G. W. Ayton, Highway Surveyor's Office, Chester-le-Street.
"	20	Grange-over-Sands—Materials	Urban District Council	T. Huddleston, Surveyor, Council Offices, Grange-over-Sands.
"	20	Tanfield, Durham—Roads and Streets	Urban District Council	R. Heslop, Surveyor, Tanfield.
"	20	Weston-super-Mare—Roads, &c.	——	Wansbrough, Sons & Garner, 6½ High Street, Weston-super-Mare.
"	21	Burnley—Materials	Highways & Sewage Committee	G. H. Pickles, Borough Surveyor, Town Hall, Burnley.
"	21	Beverley, Yorks—Materials	East Riding County Council	A. Beaumont, County Surveyor, County Hall, Beverley.
"	21	Driffield, Yorks—Materials	Rural District Council	T. C. Beaumont, Surveyor, Driffield.
"	21	Horsham, Sussex—Materials	Rural District Council	W. Dengate, 58 Park Street, Horsham
"	21	Sparkhill, near Birmingham—Materials	Yardley R.D.C.	A. W. Smith, Surveyor, Council House, Sparkhill.
"	21	Wrexham—Materials	Town Council	Borough Surveyor, Wrexham.
"	21	Burnley—Materials, &c.	Highways & Sewage Committee	G. H. Pickles, Borough Surveyor, Town Hall, Burnley.
"	21	Durham—Granite Setts	——	J. S. Pegge, City Surveyor, Durham.
"	21	Hoylake—Materials	Urban District Council	L. G. Dashper, Surveyor, Council Offices, Hoylake.
"	21	Sibsey, Lincs—Granite or Slag	Rural District Council	J. M. Simpson, Clerk, Boston.
"	23	Tendring, Essex—Flints	Rural District Council	J. Bell, Highway Surveyor, Weeley, Colchester.
"	23	Durham—Granite Setts	——	City Surveyor, Durham.
"	23	Goole, Yorks—Road Materials	Urban District Council	C. Owen-Baines, Surveyor, Council Offices, Chapel Street, Goole.
"	23	Ruthin, Denbigh—Roadstone, &c.	County Council	E. W. Jones, District Surveyor, Wrexham.
"	24	Wembley Middlesex—Granite, Gravel and Hoggin	Urban District Council	W. Bagshaw, Clerk, Public Offices, Wembley.
"	24	Ilford—Materials	Urban District Council	J. W. Benton, Clerk, Public Offices, Ilford.
"	24	Uppingham, Rutland—Granite	Rural District Council	J Fowler, Clerk, Uppingham.
"	24	Uppingham, Rutland—Granite	Gretton R D.C.	J. Fowler, Clerk, Uppingham.
"	24	Brownhills Staffs—Materials	Urban District Council	W. B. Chancellor, Town Surveyor, Public Buildings, Brownhills.
"	25	Strood, Kent—Road Maintenance	Rural District Council	J E. Povey, Clerk, Workhouse Strood.
"	25	Leek, Staffs—Materials	Urban District Council	C. C. Brown, Surveyor, Town Hall, Leek.
"	25	Darwen—Street Works	Corporation	Borough Engineer, Municipal Buildings, Darwen.
"	25	Leyland, Lancs—Materials	Urban District Council	M. H. Wilkinson, Surveyor, Leyland.
"	25	Thame, Oxon—Granite	Urban District Council	H. Howland, 17 Chinnor Road, Thame.
"	26	Cheshunt—Kerbing, &c.	Urban District Council	R. H. Jeffes, Surveyor, Manor House, Cheshunt.
"	26	London, N.E.—Wood Paving	Hackney Borough Council	N Scorgie, Borough Surveyor, Town Hall, Hackney, N.E.
"	27	Ramsey, Hunts—Granite	Urban District Council	F. E. Sarjeant, Clerk, Ramsey.
"	28	Gateshead—Materials	Corporation	J. Bower, Borough Engineer, Town Hall, Gateshead,
"	28	Romsey, Hants—Materials	Rural District Council	J. White, District Surveyor, Cambria House, Winchester Road, Romsey.
"	28	Waterloo, Lancs—Materials	Urban District Council	F. S. Yates, Surveyor, Town Hall, Waterloo.
"	28	Willenhall, Staffs—Materials	Urban District Council	T. E. Fellows, Surveyor, Town Hall, Willenhall.

Complete List of Contracts Open —*continued*

ROADS AND CARTAGE—*cont.*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
March 30	Shoreham, Sussex—Materials	Urban District Council	F. Slaughter, Town Surveyor, West Street, Shoreham.
,, 31	Smethwick—Street Works	Corporation	C. J. F. Allin, Borough Surveyor, Town Hall, Smethwick.
,, 31	Smethwick—Materials	Corporation	C. J. F. Allin, Borough Surveyor, Town Hall, Smethwick.
,, 31	Dartford -Kerbing, &c.	Urban District Council	W. Harston, 8 Hythe Street, Dartford.
April 4	Chingford, Essex—Making-up, &c.	Urban District Council	W. Stair, 14 The Parade, Chingford.

SANITARY:

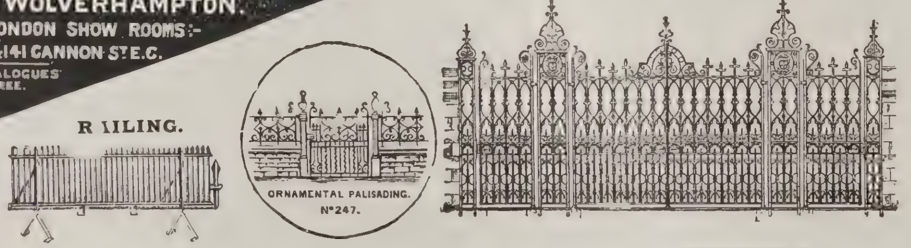
DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
March 19	Brechin, Forfarshire—Drainage Works	——	A. A. Symon, Engineer, Brothock House. Arbroath.
,, 19	Kendal—Sewerage Works	Corporation	R. H. Clucas, Borough Engineer, Town Hall, Kendal.
,, 19	Barnsley—Scavenging	Rural District Council	J. Senior, Clerk to Parochial Committee, Carlton.
,, 21	Conway—Sewers, &c.	Sanitary and General Purposes	F. A. Delamotte, Engineer, Town Hall, Conway.
,, 21	Sparkhill, near Birmingham—Sewer Pipes, &c.	Yardley R.D C	A. W. Smith, Surveyor, Council House, Sparkhill, near Birmnghm
,, 21	Hoylake—Disinfectants, Drain Pipes, &c.	Urban District Council	L G. Dashper, Surveyor, Council Offices, Hoylake.
,, 21	Billinghurst, Sussex—Drainage Works	Horsham R.D.C.	W. Vaux-Graham, 5 Queen Anne's Gate, Westminster, S.W.
,, 21	Wrexham—Pipes, &c	Town Council	Borough Surveyor, Wrexham.
,, 23	Gorton, Lancs—Drainage Works	Urban District Council	C. J. Lomax, 37 Cross Street, Manchester.
,, 23	Tanfield, Durham—Scavenging	Urban District Council	Surveyor, Tanfield
,, 24	Ilford—Drain Pipes, &c.	Urban District Council	J. W. Benton, Clerk, Public Offices, Ilford.
,, 24	Wembley, Middlesex—Disinfectants, &c.	Urban District Council	W. Bagshaw, Clerk, Public Offices, Wembley.
,, 25	Dorchester—Disinfectants, &c.	Town Council	Borough Surveyor, Dorchester.
,, 26	Bexley, Kent—Sewers, &c.	Urban District Council	W. J. Lomax, 11 Fold Street, Bolton.
,, 26	Camelford, Cornwall—Sewerage Works	Rural District Council	S. W. Jenkin & Son, Engineers, Liskeard.
,, 28	Waterloo, Lancs—Pipes, Disinfectants, &c.	Urban District Council	F. S Yates, Surveyor, Town Hall, Waterloo.
,, 28	Willenhall, Staffs—Disinfectants, Pipes, &c.	Urban District Council	T. E. Fellows, Surveyor, Town Hall, Willenhall.
,, 30	Sevenoaks—Sewers, &c.	Urban District Council	S. Towlson, Surveyor, Council's Offices, Sevenoaks.
,, 31	Hamilton, Scotland—Drain Pipes	——	J. Watson, Road Surveyor, Strathaven.
,, 31	Wyke Regis, Dorset—Sewerage Works	Weymouth R.D.C.	Lemon & Blizard, Engineers, Castle Lane, Southampton.

TIMBER:

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
March 23	Bolton, Lancs—Timber	Waterworks Committee	Mr. Swindlehurst, Waterworks Engineer, Town Hall, Bolton.
,, 23	Blackburn—Timber	Corporation	A. S. Giles, Electrical Engineer, Electricity Works, Blackburn.
,, 30	Shoreham, Sussex—Timber	Urban District Council	F. Slaughter, Town Surveyor, West Street, Shoreham.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
March 31	Hull—Extension of Town Hall	£300, £200, £100.	£5.	E. Laverack, Town Clerk, Town Hall, Hull.
,, 31	Castleford, Yorkshire—Public Library	£15, £10.	——	H. A. Broadbent, Clerk to Urban District Council, Castleford, Yorkshire.
,, 31	Chelmsford—Infectious Diseases Hospital	£25, £10.	£1.	A. S. Duffield, 96 High Street, Chelmsford.
April 4	Wycombe—Town Hall and Municipal Buildings	£110, £26 5s.	——	T. J. Rushbrooke, 77 Easton Street, Wycombe.
,, 10	Yeovil—Laying-out Land for Town Hall, Municipal Buildings, Markets, &c.	£21, £10 10s.	——	Borough Surveyor, Yeovil.
,, 14	Blackpool—Technical Schools	£60, £25, £15.	£1 1s.	J. S. Brodie, Borough Surveyor, Town Hall, Blackpool.
,, 30	Fenton, Staffs—Library	£60, £30.	£1 1s.	S. A. Goodall, Surveyor, Town Hall, Fenton, Staffs.
,, 30	Sunderland—Alterations to Hall	£100, £50, £25	£ .	J. W. Moncur, Borough Engineer, Town Hall, Sunderland.
No date	Tasmania—National Memorial to Soldiers killed in S. Africa.	——	——	Agent-General for Tasmania, 5 Victoria Street, S.W.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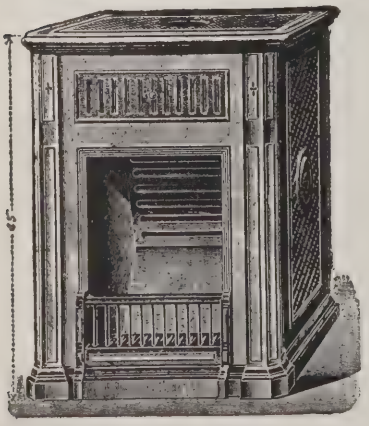

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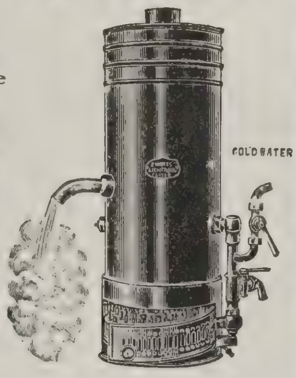

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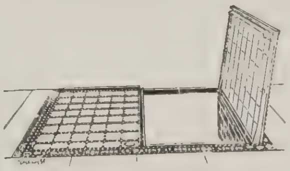

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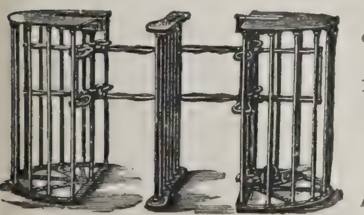

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Bankruptcies.

DURING THE WEEK ending March 14th fifteen failures in the building and timber trades in England and Wales were gazetted.

KING & WILKINS, builders, Sherbrook Road, Fulham. Receiving order made March 11th.

THOMAS WARDEN, builder, 3 Beckenham Road, Leicester. A receiving order has been made on a creditor's petition, the act of bankruptcy being the execution of a deed of assignment for the benefit of creditors.

W. PURKIS, builder, London Road, Braintree. The Official Receiver has issued a summary of the statement of accounts, showing gross liabilities £5,540 5s. 3d. (of which £513 18s. 5d. are unsecured) and the assets £743 7s. 8d.

J. J. AUSTIN, builder and contractor, West Bridgford, Notts. First meeting of creditors held last week at the offices of the Nottingham Official Receiver. Debts £1,392; assets about £220; deficiency £1,170. Mr. T. Leman was appointed trustee, and a committee of inspection was elected.

W. DRABBLE STOKES, builder, Eckington, came up for his public examination at the Chesterfield Bankruptcy Court on March 13th. Liabilities £495; deficiency £214. Failure was attributed to inability to dispose of property, heavy interest on borrowed money, and shortness of work. The examination was adjourned for a month.

JOHN GARNER, builder and contractor. Ruthin. Public examination held last week at Wrexham Bankruptcy Court. Liabilities £428 14s. 3d.; assets £258 15s. The debtor alleged his failure to be due to "losses upon building contracts which he had been taking too low pressure by creditors, and want of capital." The examination was closed.

LUMMIS & SON, builders, Chelmsford. Public examination recently held. Liabilities £1,443 9s.; deficiency, £971 5s. 11d. Failure attributed to loss upon contracts, general decline in value of property, and not keeping proper books of account. The examination was adjourned. At a subsequent meeting of creditors Mr Fred Taylor was appointed trustee.

REUBEN YOUNG, builder, 55 Walbrook Street. Derby. Public examination held last week. Causes of failure stated to be over-speculation, depreciation, bad trade and high price of building materials. Debtor lost £2,410 within four years. The examination was adjourned until April 21st, the debtor being ordered to file a profit and loss account.

BISHOP, PRATT & CO., LTD., builders' merchants. 7, Wormwood Street, London. E.C Meetings of the creditors and shareholders were held last week at the Board of Trade Offices. Lincoln's Inn. Liabilities estimated at £2,688; assets £1.494, exclusive of uncalled capital to the amount of £1,000. The failure of the company was apparently attributable to reckless trading, mismanagement and the large drawings by the managing director for salary and expenses. It was resolved that the matter should remain in the hands of the Official Receiver, with a committee of inspection.

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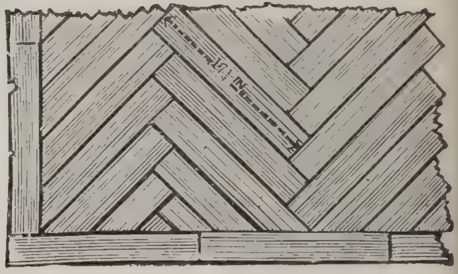

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THE

BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

March 25, 1903. Vol. 17, No. 424. 9, East Harding Street, E.C.

Quantity Surveyors. FROM the particulars given in another column it will be noticed that an association of quantity surveyors is proposed to be formed. We wish the project every success. Quantity surveying has for many years past been more and more assuming the position of a separate and distinct profession. The quantity surveyor is the product of the present contract system, and whilst that system remains the quantity surveyor remains. Too much specialization in any direction is not to be encouraged, but the quantity surveyor obviously performs work which it is hardly possible for the majority of architects to do efficiently in addition to their ordinary duties. The quantity surveyor's duty is to prepare an accurate bill of quantities for the use of builders in submitting tenders, and t is therefore highly desirable that there should be a uniformity of practice so as to ensure equality of tendering. This demands special knowledge. As the quan-ity surveyor's estimates are to be used by he builder, it follows that he must be a practical man, with a thorough knowledge of the way in which work is actually executed. Bills of quantities are got out at he instigation of the client and for his advantage to secure lower tendering and closer competition, for if builders were obliged to take out their own quantities on a big job very few would undertake to ender. Therefore, the quantity surveyor's ees should be paid by the client. And as builders cannot afford time or money to check every bill of quantities (often, indeed, hey do not see the drawings or specification) t is only right these should be included as part of the contract. There are one or two difficulties that arise, however, from the specialization of work. One is that a quantity surveyor is called in at a stage when the drawings and specifications are not quite complete and very few of the details elaborated; in fact, nowadays more often than not, he is called upon to write he specification—a reprehensible practice. He has thus to conjecture the probable orm of much of the work, especially of he details, as it is impossible for him to keep asking the architect a multitude of questions. This difficulty is obviated to a great extent by an architect always employ-ng the same quantity surveyor, who then gets to know his special methods of work. The second objection is that bills of quan-ities militate against the alterations which should be made as the work proceeds, for t is impossible to realize everything until he work is going up. In illustration of this point we need only refer to the custom of builders when pricing out the items to put those which they know cannot be omitted at a very high figure, while others which are likely to be reduced are put at a low price, so that in the end all the profitable work may be left. For this reason, on an important building a schedule of prices would often be better, and then a quantity surveyor would not be needed. But while the quantity surveyor remains he deserves every consideration; and we are therefore glad to see an association formed to look after his interests.

St. Mark's Campanile. THE Royal Academy Fund in aid of the rebuilding of St. Mark's Campanile is proposed to be closed during the second week in April and the contributions forwarded to the Sindaco of Venice before the 25th of next month, on which date it is hoped the foundation-stone of the new tower will be laid. Up to the present about £260 has been collected, and on looking at the list of subscribers one does not find that the proposal has been supported much by architects - only three names are there, Professor Aitchison and Mr. Bodley (£5 each) and Mr. Saxon Snell (£2 2s.). "Artists" and "art patrons" seem to make up the bulk of the subscribers, and thus we find Mr. Abbey, Mr. Seymour Lucas, Professor Herkomer and Sir William Richmond sending £5 each, Mr. Luke Fildes and Sir Lawrence Alma-Tadema £10 each, and Mr. Orchardson £10 10s.: while, as regards the sculptors, Mr. Colton has subscribed £2 2s., Mr. Brock and Mr. Frampton £5 each, and Mr. Thornycroft £5 5s. The list is indeed very characteristic of those who want the Campanile back again as it was. It is "artists" who want this—"artists" who have known Venice and desire their impressions of it to remain unaltered. We appreciate their view of the matter, but have contended from the first that if the Campanile was to be rebuilt at all it ought to be a new design and not a mere duplicate. Everyone will admit that the old tower dominated the basilica to such a degree that the proportions of the latter were greatly depreciated. Now that it has fallen, the basilica "shines forth in augmented astonishing splendour." The rebuilding about to be commenced is largely a matter of sentiment. The old Campanile claimed interest for its age, if not for its intrinsic merit. The new one can have no such interest. It will be a mere duplicate, a sad acknowledgment to future generations that we could not trust ourselves to build a tower embodying the spirit of the century in which we live.

The Sanitary Question at Nottingham. MUCH attention is at present being directed to the sanitary system at Nottingham, and it is a matter which concerns many other towns as well. The waste-water closet system was adopted at Nottingham five or six years ago, and it has proved so unsatisfactory that the Health Committee of the Corporation propose to abandon it, stipulating that all newly-built houses and buildings shall be supplied with a *water-closet* approved by them. The supply of water to the town and its suburbs averages about 26 gals. per head of the population, which, compared with the London average of 40 gals., is scanty: and so, with the object of saving water, there are several systems of sanitation to be found in the town. The earth-closet or "ash-pit" system is in use, the "tub," several varieties of waste-water closets, and, in the better-class property in the Park, the ordinary wash-down closet. Several of these systems are frankly insanitary and have lately been severely condemned—the earth-closet and "tub" systems in all except the most rural districts are very bad ones – but more especially the waste-water closets have been under consideration. There are 40,000 of the "tubs" at Nottingham. As to the waste-water closets which were adopted to gradually supersede these "tubs," it has been objected, first, that the water used is little better than sewage; that a large amount of fatty material and vegetable matter collects in the sinks of the houses, corroding and caking the tippers to a very objectionable degree; and that they are most liable to get out of order. There can be no doubt, however, from the experience of other towns, that the waste-water closet system can be a thoroughly sanitary one: and it seems probable that at Nottingham the closets are either improperly used or they are not of a good pattern. Opinion on the matter is much divided among members of the Corporation, and the long debate which recently took place resulted in a motion for adjournment being carried. Meanwhile the Health Committee find themselves in a difficult position. They do not propose to touch the 40,000 "tubs" already existing, stipulating only that there shall be no more of them. Doubtless the replacing of these closets by others flushed from a cistern would entail much hardship on some property owners; but this seems to be the only practicable way of abating the nuisance, for though the new closets might give no trouble the old ones would be as bad as they are now: and it is their present insanitary condition which is causing anxiety.

SOME CAMBRIDGE COLLEGES.

By **J. A. T. HOUSTON.**

(Concluded from p. 66 of No. 423.)

It is necessary to trace some of the buildings prior to the foundation of the actual Trinity College. King Edward's tower was built during 1426-37, and was taken down and rebuilt in 1600, forming the present entrance to the chapel.

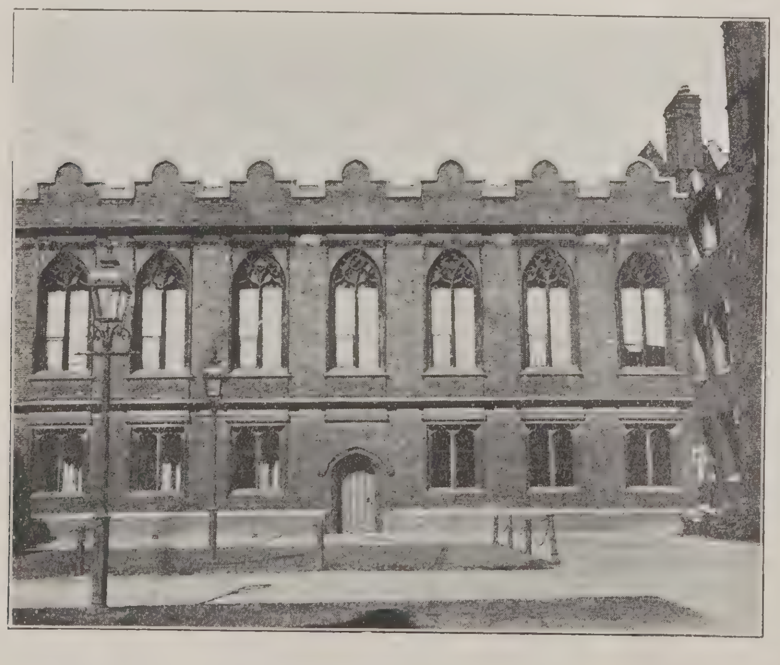
A small chapel was built during 1464–84, occupying twenty years in construction and being finished at the beginning of the reign of Richard III. The great gateway tower which now forms the principal entrance to the college was commenced in 1518, and 1535 saw its completion.

When the site was handed over to the community by Henry VIII. they found themselves in the possession of one chapel, three halls (King's Hall, Michael House, Pyswick Hostel), the chambers of these three bodies, and a few other subordinate hostels. At this time King's Hall had a community of fifty persons; Michael House, twenty-one; and Pyswick Hostel, forty persons. In order to bind this into one establishment, enlargement was rendered necessary. In 1551 we find the destruction of Michael House and Pyswick Hostel is being proceeded with.

The college had obtained from King Henry a gift of the site and buildings of the Grey Friars, and this they used as a quarry. In 1554 the college appears to have drawn up a scheme for its complete reconstruction. They started with a range of chambers which were subsequently pulled down by Dr. Neville. These chambers occupied the north-west corner of the great court. The years 1555–64 saw the building of the chapel. The first range of buildings was authorized by Philip and Mary. They had at this time two sites for the building of the library. The college seemed very fond of the idea of raising the library on a cloister, as was actually carried out by Wren in his fine building in Neville's Court.

In 1593 Dr. Thomas Neville was appointed master, and remained so for twenty years, and to him the college owes its present noble scale. The following account of his labours is reduced from a record of the time:—When he first came to the college he was struck by the remarkable absence of beauty in the buildings, and he set himself diligently to the rebuilding of the college. When he had completed the great quadrangle and brought it to a decorous aspect (for fear the deformity of the old hall, which through extreme old age had become infirm and ruinous, should cast as it were a shade over its splendour), he himself provided funds for the building of a great new hall, worthy of the quadrangle. In these additions he acted under the advice of Ralph Symons, who had already acted as architect to Emmanuel College, and who designed the second court of St. John's College later. Neville built the south side of the great quadrangle and Queen Tower, 1594–97, and in 1600 he pulled down the range of buildings erected just before and adjoining the chapel which destroyed the symmetry of the quadrangle. He took down and erected King Edward's Tower as an entrance to the chapel, and erected the master's lodge. This course, no doubt, was suggested by Ralph Symons, and it has left us with the most spacious quadrangle in Cambridge.

CUPOLA TO DINING-HALL, CAIUS COLLEGE, CAMBRIDGE. DRAWN BY J. MYRTLE SMITH.



THE LIBRARY, ST. JOHN'S COLLEGE, CAMBRIDGE: FRONT TO QUADRANGLE.

The hall referred to above was commenced in 1604 from designs by Symons, and finished in 1605. The hall was, for the time, built with extreme rapidity, occupying only eighteen months in construction. The kitchen was even more rapidly erected, as the foundation-stone was laid on July 7th, 1605, and the last slater's account paid by November 24th of the same year. Before designing the hall they took the very sensible course of examining some existing halls. They selected the hall of the Middle Temple as the most suitable, and there is a record of their visit to London concerning it. Both halls are of the same dimensions—100ft. by 40ft. by 50ft. high. This completed the building of the great court.

Neville, at enormous cost to himself, next set himself to the building of the second court in 1614, known as Neville's. This was built in a Jacobean manner, and was repaired and Italianized by Essex in 1755. In 1614 the great tower at the entrance gateway was raised and beautified, and the figures, which were carved in London, were placed in position. Neville died in 1615.

In 1705 they erected an observatory in the roof of the gateway, but this was removed in 1797. The great court measures:—West side, 340ft.; south side, 288ft.; east side, 325ft.; north side, 257ft.

In 1750 the whole of the great court, or nearly all, was stuccoed and generally repaired. In 1775 the architect Essex Italianized the south-west corner, and it was intended to treat the whole court in this way, but it was never carried out.

We will next turn our attention to the new library, which forms the west side of Neville's Court. This building was designed by Sir Christopher Wren, who rendered his services gratuitously. Wren probably did this because he was a close friend of Dr. Barrow, who was the master of Trinity from 1673 to 1677. Wren made two designs for this library. The first was a circular building 90ft. high by 65ft. in circumference, covered with a dome and cupola, and this idea was actually carried into execution at the Radcliff Library, Oxford, by James Gibbs. After this design was made, the college decided to lengthen Neville's Court, and this rendered the circular design unworkable. The present design is said to owe its inspiration to the library of St. Mark's, Venice. Wren made six drawings of his design and sent careful written instructions explaining it.

To use Wren's own words, he says: "I chose a double Order rather than a single. A single Order must either have been mutilated in its parts or have been very expensive." He further says: "I suppose you have good masons, however. I would willingly take further pains to give all the mouldings in great. We are scrupulous in small matters, and you must pardon us. The architects are as great pedants as the critics or heralds."

There are records of the mason going eight times to London to consult Sir Christopher during the course of the work, which was commenced in 1675 and occupied twelve years in construction. Ketton stone was used.

The woodwork, which is of very fine design, and is, if I remember rightly, of Normandy oak, was made by Corneilius Austen, who twice visited Wren regarding it. The woodcarving is by the famous Grinling Gibbons. The statues represent Divinity, Law, Physic and Mathematics; they were cut in 1681 by Gabriel Cibber. The classical composition opposite is probably also by Wren, but it is not nearly so finely detailed. The entire Library was completed in 1695, at a cost of £17,000. The ceiling was left plain, but was executed in 1850 from a design left by Wren. The college remains now practically as when it was left in the twelfth century, and no buildings of any extent have been erected during the modern period. This finishes Trinity College.

Other Colleges.

Caius College: Gate of Honour.—This very interesting relic was designed by Theodore Haveus or Heave during 1574–75. It was one of the first attempts at the new Italian style in England.

Clare.—The bridge was designed and built by Robert Grumbould at a cost of £284. He received 3s. for the design. The river-front was built in 1671, and the side next King's during 1646 and 1642; the quadrangle and gateway in 1388.

Emmanuel.—Founded by Sir Walter Mildmay, 1584. The original college was built by Ralph Symons, but little now remains. Symons is referred to as "a well-minded man toward Emmanuel College so lately founded and newly builded, the workmanship whereof touching the stonework hath been wrought and performed by the said Ralph Symons wherein he hath shewn himself very diligent and careful." The chapel was designed by Wren in 1667. The founders' range with the beautiful Ionic doorway was rebuilt in 1719

Pembroke.—The chapel was built by Bishop Wren from plans by his nephew on his release from the tower in 1665.

Peterhouse.—Wren's uncle was master here. The chapel was built by him (1635). It is often attributed to Sir C. Wren, but wrongly.

Queen's.—Bridge built 1749; principal court, 1448; cloister court, 1484–94.

Senate House.—James Gibbs, architect, 1750.

St. John's.—The first court of St. John's was built during 1510–20. The second court was designed and carried through by Ralph Symons and Gilbert Wigg from 1599 to 1602. In an old document they are referred to as undertakers. They did not make a satisfactory job, as we read that the undertakers were undone; for Wigg was landed in prison, and it was also disastrous for Symons, as he lost a hand by accident, and thereafter left Cambridge and appeared no more. Third court, 1669–1712; library, 1623–28; bridge with gateway, 1696–1712; new chapel, 1669; new court, 1825.

Christ's.—Gateway front, 1714–38.

St. Catherine's.—This college was founded by Robert Wodelarke (the same who got into trouble at King's). It was entirely rebuilt through the energy of Dr. Eachard, master, 1675–1697. Chapel with Ionic doorway, 1704; other building of similar design to the chapel, 1757.

The development of collegiate architecture is perhaps one of the most interesting phases of building, preserving as it does the method in which past generations have thought and worked and handed down to us their traditions as an architectural birthright. The gradual building of these colleges, too, shows us the change from style to style. In reading the records of the time one is struck by the spirit in which everything was conceived. They were quite as commercial and hard-headed then as now.

People speak nowadays as if all the old and good work was done by architects working regardless of requirements and cost, a kind of ideal existence possible only in Heaven. If this was so, they worked without a problem to solve, and without a problem you can have no solution. To each problem there is but one solution—the logical one—and that solution is only obtainable after trying every other conceivable and inconceivable one, trying every short cut and subterfuge and trick of the trade or tradesmen. These old architects used a logical method of getting their solution. If a building was too small or ruinous and wore itself into a hole on one side, they did not patch it up with material of the same pattern that had been out of stock for some years, but used the latest pattern. They were in fact rather proud of their new patterns, which were arrived at as improvements or by reason of increase of knowledge.

I have thought it necessary to give you this short history of King's and Trinity, as the spirit in which the work was conceived and carried out is as important as the work itself.

The buildings have been reared by the toil and philanthropy of some and the love of others, and consecrated by the prayers of generations; and though the ideal has fallen far short in execution (as at King's), yet as the shadowy substance of what might have been, and is not, passes before the mind's eye one may bestow, for the thought, a passing blessing on a long-forgotten and profligate King of England.

[For the historical matter of this paper the author is indebted to the following works:—Reginald Blomfield's "Renaissance in England"; Belcher and Macartney's "Later Renaissance in England"; J. Alfred Gotch's "Early Renaissance in England"; W. J. Loftie's "Christopher Wren"; and Wells and Clarke's "History of the Colleges of Cambridge."]

A new Organ for Christ's Hospital is being erected in the chapel at Horsham. It was constructed by Mr. A. Kirkland, of Upper Holloway. The handsome oak case was designed by Messrs. Aston Webb & E. Ingress Bell, architects of the Institution.

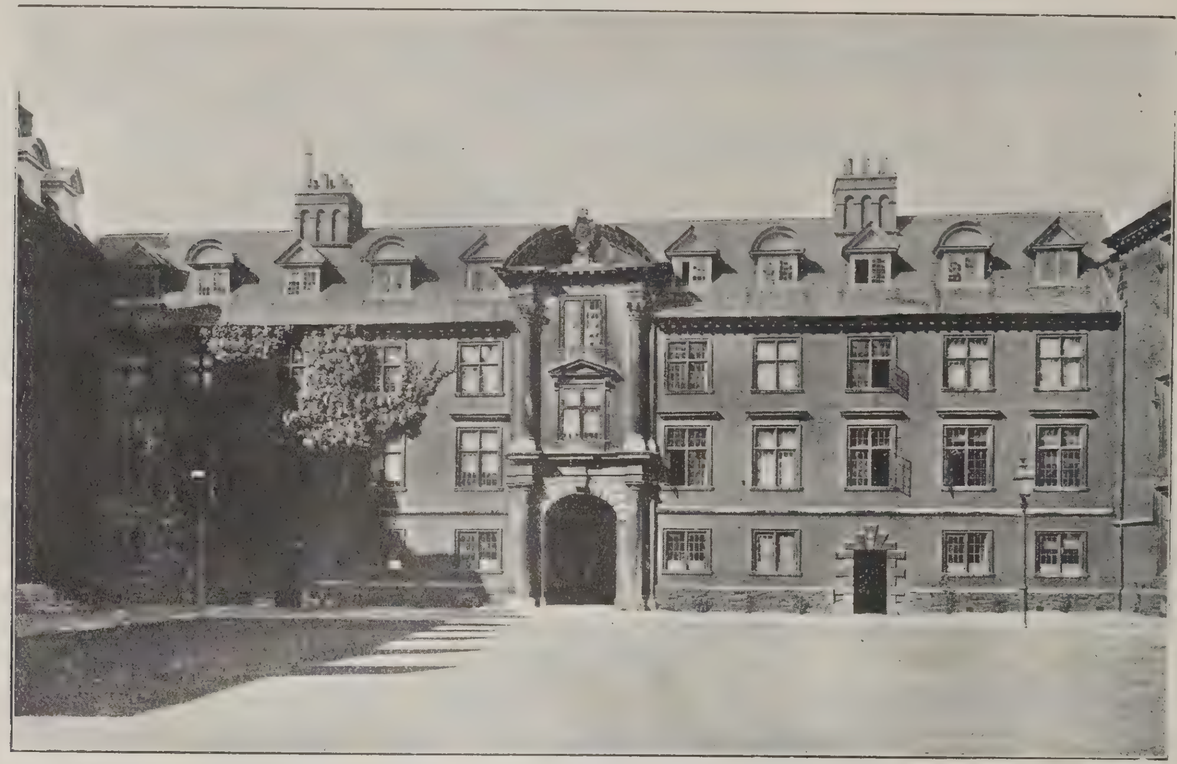
EMMANUEL COLLEGE, CAMBRIDGE: THE CHAPEL.

THE ARCHITECTURAL ASSOCIATION.

TOWN HOUSES.

A MEETING of the Architectural Association was held last Friday, Mr. Henry T. Hare presiding. It was announced that Mr. S. D. Adshead had been reinstated a member of the Association, and that the following donations to the New Premises Fund had been received:—Mr. Thomas Blashill £10 10s., Mr. Sidney R. J. Smith £5, Mr. T. C. Agutter £3 3s., and Mr. W. G. R. Bousfield £2 2s. A vote of condolence with the family of the late Prof. T. Roger Smith was then passed. The list of nominations for the officers of the Association to be elected for the next session was read, and included the following:—Mr. Henry T. Hare, president; Messrs R. S. Balfour and Arnold Mitchell, vice-presidents; and Messrs. H. P. G. Maule and H. Tanner, jun., as hon. secretaries. Mr. Henry White, A.R.I.B.A., then read a paper on "Ancient and Modern Town Houses; or the Evolution of Domestic Architecture in London." He referred to ancient town houses at length, and then went on to treat of modern houses in detail. The following is a summary:—

It appears to have been the rule until quite recent times to have spent whatever time and thought was given to the planning of houses on the ground and first floors, the basement and upper floors being fearful and wonderful. It was all for "my lord and lady," and let the serving men and women shift for themselves; "live, and be thankful,"



ST. CATHERINE'S COLLEGE, CAMBRIDGE: FRONT TO QUADRANGLE.

was thought good enough for their motto and they accepted the situation. The reception rooms having been planned, the bedrooms, children's and servant's apartments had but little attention bestowed upon them, and were more often than not badly lighted, badly arranged, and, to use a paradox, low in height. It is extraordinary why the early builders should have ever willingly burrowed down into the earth and increased their difficulties as to lighting and draining to such an extent.

The brothers Adam, while adopting the characteristics of the vernacular style, impressed an individuality and refinement of detail on their work which does not appear to have been attained by any architect since. Examine the illustrations of their work and the skill in the "design" of their plans, the symmetry, proportions, and refinement of detail in their decorations, and remember that they could and did treat their decorations architecturally; each reception-room, hall and staircase being separately studied and treated—walls, ceilings, floors, chimney-pieces, windows, doors, and even the window and door fittings and the furniture were designed in the same style and scale as the house and with the same delicacy of detail.

The fenestration in the work of the brothers Adam was designed to show the relative importance of the rooms, but (with the exception of the drawing-room floor) the windows in many cases were too small to properly light and ventilate the rooms; and it is curious they failed to realize the great defect which a centre pier between two windows produced as regards the effective lighting of a long room end on to the front.

The question of fenestration, formerly the keynote to the design and proportion of house fronts, seems in much of the work now being done to be relegated to the background—if not, indeed, forgotten in the craze for novelty of arrangement regardless of the position or needs of the rooms.

The lower rooms, although requiring the largest windows in proportion to their size (particularly in narrow streets), are frequently under-lighted, whilst the upper floors are over windowed, and the desire for variety is allowed to dominate the whole character of the front. This criticism applies to town house architecture, not blocks of flats, where each floor is almost of the same importance.

The work of John Nash had none of the refinement of detail of the brothers Adam, although one quality of his work—namely, breadth of effect, grouping, and balance—is well worth studying.

Until some of our prominent estate owners make the opportunity by dealing with blocks of houses at a time instead of solitary slips, there appears little chance of any change from the kaleidoscopic effects in our streets which our present lack of system and scheme produces.

In dealing with recent work it is difficult to differentiate between the characteristics of the plans of various architects, and it would be necessary to devote a special paragraph to the work of each man to bring out these points, but a study of the plans which have been published shows that in later years much has been done to give greater individuality to the plans of even ordinary terrace houses than was formerly the case; but a writer has truly said that, "except in the minority of instances, town houses are not built by the men who inhabit them, and, in rarer cases still it is where ground values and questions of light and air do not entirely overrule the æsthetic influences of architecture itself." Indeed, most of the best modern work is that which has been done by architects for special clients to meet the latter's particular requirements; further, the site and its surrounding in many cases dictate the general laying-out of the plan.

Aspect must also be considered as far as possible, even in smoky, murky London.

Planning is, perhaps, not quite so interesting to students as designing the elevations, and yet the importance of the plan *cannot* be overrated; and the art or science of planning, as shown in the works of the best masters, is a very different thing indeed from that which comes from less able hands, and most certainly does "count."

Having received instructions to build a house in London—say, upon the site of an old one—the architect should study as far as possible the client's mode of living, his "hobby," and the accommodation he requires, and must not forget that "cost" will enter largely into the question and enhance his difficulties.

Further difficulties may then present themselves in the shape of Acts of Parliament and L.C.C. by-laws; and neighbours' rights (vested interests), if neglected by the architect, will probably land him and his client into sad trouble and worry.

In building upon a large estate other difficulties may be presented. The owner's and his surveyor's views require special attention, and the popular cry against the ground landlords naturally make them desire to meet their tenants in some instances, and otherwise sometimes compromises have to be made, and the architect's hands are by no means unfettered.

In the modern town house of the terrace type, whether the frontage be 20ft. or 30ft., the problem is much the same; that is, the same number of rooms—in a given locality—will be asked for, the keynote being the relation of the hall and staircase to the rooms.

Modern ideas as to the position of the sanitary block have completely changed his type of plan since the Adam's time. Most people want to enter their rooms direct from the hall or corridors, and require that the rooms be not "passage" rooms from one part of the building to another.

There is a tendency (upon restricted sites) to omit the morning-room and to enlarge the hall and make it more like a room; there is no doubt a considerable charm in this type of plan, and where the staircase is well treated and is not allowed to take up too much room the hall becomes a useful lounge. A good fireplace is essential if it is to be so used, and well-arranged radiators materially add to the warmth and comfort of the house.

If a staircase from the basement to the outer hall can be obtained, the inner hall is less liable to disturbance by the entrance of servants.

Such a plan often permits of side-lighting from an area which is most desirable, but usually the space given up to the area is not sufficient—the air is stagnant, and very little light is obtained, the result being again unsatisfactory. If "pairs" of houses can be built the areas become double in size so far as light and air go, and this is a great gain to both houses.

The usual "Adam" staircase is top-lighted, and although in many cases this has been effectively treated the great defect is a gloomy hall. This can in some cases be avoided, and in a Harley Street house a window has been introduced upon each half-landing in addition to a good lantern-light—thus flooding the hall and staircase with light and giving ample ventilation, which is not to be obtained by the merely top-lighted staircase. This is a simple solution of the problem, and might be more often adopted with advantage. It breaks up the long shadows cast by the upper flights of stairs and landings, and gives a sense of brightness and airiness which has proved attractive.

There is another determinant as to the position of the staircase, and that is the planning of the drawing-room. If double or connected drawing-rooms are required the staircase cannot be taken up between the rooms in the ordinary 20ft. to 30ft. frontage; if, however, connected rooms be not required, and the site is sufficiently deep, a central staircase lighted either from the top or from an area, or from both, can be obtained, and examples of this type are worth studying.

A second staircase should, wherever possible, be provided; in the smaller houses, of course, it is not possible, and its substitute, although sometimes practicable, is expensive—it is a small passenger-lift. But unless this can be worked by electricity, and arranged to be used without a special attendant, it is not of much use.

Whilst dealing with the position of the staircases the relations of same to the kitchen is of great importance. In some of the old plans the service appears to have been almost lost sight of, and the labour to the servants must have been immense, and would not be tolerated by the present-day domestic servant.

In the smaller-sized town house it is not always possible to have a central or even an important staircase, but a well-designed one adds to the character of the house, and the very ordinary straight flight may be varied by reversing the bottom steps and thus, by a little contriving, a position is secured for a fireplace and the ordinary "passage" effect is avoided.

The rooms upon the ground floor usually required are a good dining-room (and remember that 15ft. in width is the minimum for comfort), a library and morning or own room, and a billiard-room is now more often asked for than formerly. If space be limited upon the ground floor a billiard-room can often be devised in the basement; but in such cases a staircase separate from the servants' stairs should be arranged so that access can be obtained without passing through the servants' rooms. The gentlemen's water closet and lavatory should be upon the ground floor, and well screened.

Passing to the drawing-room floor, we have to decide whether there are to be two drawing-rooms or a single drawing-room and boudoir, with perhaps a guest's bedroom.

For the ordinary house a large drawing-room, with smaller back drawing-room with large doors between and a small boudoir, is a very useful arrangement. If possible a water-closet and lavatory should be provided upon this floor, if a well-screened position can be discovered. If a guest's bedroom be planned upon this floor, a dressing-room and bathroom and water-closet is very desirable, and unless space prevents should be arranged.

The second floor is usually given up to the heads of the family, and ordinary requirements demand a good bedroom with dressing-room (large enough to use as an extra bedroom), bathroom and watercloset, and one or two smaller bedrooms. The principal staircase can sometimes with advantage terminate on this floor, and the back staircase become the staircase to the upper floors; but it should in such a case be well arranged and of more importance than the ordinary back stair. The drawback to this plan is that it becomes common to the family and servants. A skilful planner can often solve this difficulty, however.

The third floor usually follows the arrangement of the second floor. If there are children to arrange for, then special planning is required, and the accommodation should consist of a large dayroom, two or three bedrooms, bathroom, water-closet, nursery pantry with sink, small larder, linen store, and plenty of cupboard accommodation—and a lift in the case saves much labour.

ST. CATHERINE'S COLLEGE, CAMBRIDGE. FROM A WATER-COLOUR DRAWING BY PERCY E. NOBBS, M.A., A.R.I.B.A.

On the fourth floor the servants' bedrooms, boxroom, cistern room, and, if possible, isolation-room, should be arranged, with easy access to the roof and from there to adjoining roofs in case of fire.

It will not be necessary to describe in detail the rooms required in the basement, but only to insist that their proper relation to each other is of the utmost importance for the economical working of the house.

It was time that the old order gave place to the new, and that the comfort and welfare of the servants be taken into consideration, for without such consideration the comfort of the owners and occupiers must certainly be lessened, and an abnormal staff of servants will be required to do the housework.

There are numerous small points that go towards the proper equipment of even an ordinary-sized town house. Amongst them may be mentioned:—Plenty of cupboard accommodation and good linen stores—but see that these are in good positions. A carefully arranged dinner and service lift from the basement to the top floor, if possible, and large enough for coals and ordinary luggage, should be arranged. The well of the back staircase is a good position, but this sometimes is farther from the dining-room than is desirable. Telephones or speaking-tubes from each floor to the basement saves much labour. Hot- and cold-water service upon each bedroom floor, and at least two bathrooms, are required in a well-arranged house of the class we are considering. The careful arrangement of the electric lighting to control and to avoid waste must be studied, and the architect is the proper person to arrange these matters, which should be thought of when the plans are being made to avoid trouble and annoyance afterwards. The Public Health by-laws must not be forgotten, and the proper arrangement and disposition of the bathrooms, water-closets, housemaid's sinks, &c., if not well considered in planning, lead to trouble and waste of money to an alarming extent.

Most people require houses to live in. We should therefore strive to concentrate the work of the house to make it, as far as possible, bright, cheerful, and well arranged and well constructed. Give every opportunity to let such sunshine as we are blessed with enter the house wherever possible, and by so doing you will add greatly to the health and comfort of its occupants.

Prof. Beresford Pite, in proposing a vote of thanks to the author of the paper, thought the plans of old town houses could hardly be criticised from present standards, for each one of these houses represented a manner of life just as our houses represented one.

Mr. Max Clarke seconded the vote, which was supported by Messrs. T. H. Watson, H. S. Collings, H. Lovegrove, Francis Hooper, James Boyton, John Murray, Dr. A. W. Voelcker and Henry T. Hare.

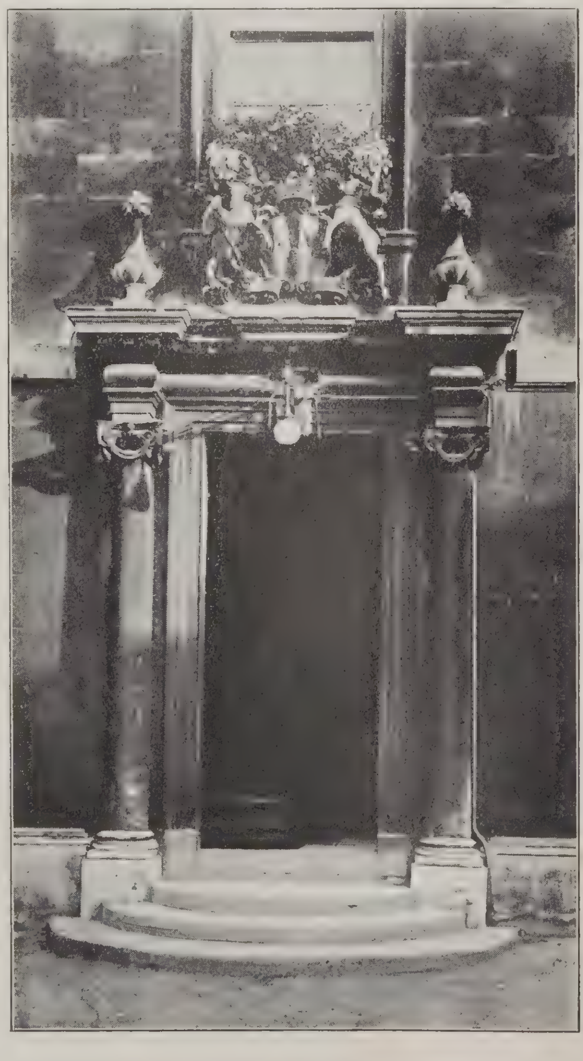
WESTMINSTER CATHEDRAL.

PROFESSOR BERESFORD PITE, after the reading of Mr. Charles Hadfield's paper on Westminster Cathedral before the Royal Institute of British Architects (reported in our last issue), said the cathedral was the work of a very singular man, a man of powerful artistic character—the work, in fact, of a great man, for there was no suggestion in it of the Philistinism of the age in which it was built. How far that philosophy was justifiable was another matter. Of Bentley as an early Gothic architect they knew from Mr. Eastlake's book on the Gothic Revival—a man of refined mind with something of Burges's strength of design. Then came that extraordinary church at Watford and the church in Cadogan Square showing an equal grasp of later Gothic. But from Watford to Westminster was a very long cry. The placing of a large commission in his hands seemed to have quite upset Bentley's preconceptions: and of all places from which to draw inspiration for a London cathedral, Ravenna, in the fever-laden marshes of the Adriatic, struck one as extraordinary—strange indeed that he should have gone back to the earliest of Christian architecture in the East, at the same time setting aside the central grouping invariably connected with it and devoting his whole attention on a great nave—a Gothic nave like that of the Cordeliers at Toulouse translated into a simple domed nave, based on the same principles of lighting and buttressing but cut loose from Gothic in its detail, and from all Classic or Renaissance tradition. Of Bentley's dreams for the beauty of that vault they could not conceive, but he (Professor Pite) suspected St. Mark's, Venice, on a large scale. That, however, was a thing of the past, and they had to be content with it as they saw it, magnificent in bare brickwork. The plan had unfortunately cramped the exterior; Bentley seemed to have felt this, so that he devoted his whole attention to the mass of the nave and the lofty campanile Whatever one's opinion might be as to details, here was the work of a great man, the embodiment of a great scheme for which we might be thankful.

To Mr. Walter Millard the contrast between the interior and the exterior was hardly reconcilable, and he could not help wishing that the great power expressed in the interior, of producing noble effects by apparently simple means, had been exercised on the exterior. The design seemed to him to be that of a man who looked at architecture as a whole, and the lesson it taught was self-reliance and unwearying effort

Mr. Aston Webb believed the cathedral would have a greater influence on the younger men than any other building erected in recent times. The plan had been the basis of its design; design was influenced by construction, and construction by design—the essential of true architecture. One saw the man himself in every corner, in every arch, in every moulding and detail—the man's very life built into his work.

Mr. Hadfield said he could not presume to know the mind of Bentley, who was singularly secretive and did a thing without saying much about it. Byzantine was, of course, not new to him, and when, after receiving the commission, he went to Italy, it was but to concentrate the study of years. The whole history of the cathedral seemed to him that Bentley was given a thing to do, that he chose what seemed to be best for his purpose, and spent his life-energy in carrying it out.



EMMANUEL COLLEGE, CAMBRIDGE: DOORWAY IN FOUNDERS' RANGE.

SOCIETY OF ARCHITECTS.

VENTILATION AND WARMING.

A MEETING of the Society of Architects was held on Thursday last, when a paper on ventilation and warming was read by Mr. B. R. Tucker, M.S.A., M.S.I., late Chief Surveyor, War Office.

After referring in some detail to the composition of air and its impurities Mr. Tucker went on to deal with systems of ventilation. He observed that in our climate we nearly always had a lower temperature outside a building than inside, which ensured the chief element required for natural ventilation. Artificial ventilation was divided into two systems, the "vacuum" and "plenum," or extraction and propulsion, each of which had its advocates, but of both it might be said that they were costly in working, besides requiring great care in management.

In the vacuum or extraction system strong currents were produced in the outlet or up-cast shafts by means of hot-water or steam coils, or by exhaust fans. There was an objection to this system when the current in the up-cast shafts was sufficiently strong, as it then caused every aperture to become an inlet, drawing impure air from sources not intended. There was also another serious difficulty in buildings having only one up-cast shaft, the rooms most remote from it scarcely getting any current at all. For these reasons this system was in little favour.

By the plenum or propulsion system, unlike any other, the air could be taken from any desired source, away from contamination; it could not be filtered, washed, warmed or cooled, as desired. It was then driven by fans through tubes or ducts (generally placed in the basement); from these it was conveyed by up-cast shafts to the several rooms, &c., the air in each case discharging by a hopper-mouthed louvred opening (the louvres fixed at an angle of 40 degs.), so that the air might impinge against the ceiling. The opening was placed not less than 7ft. 6in. above the floor, so that the air might discharge over the heads of the occupants; it then struck the opposite wall, where it descended (split up), returned across the room to the foot of the wall at which it entered, and was here forced into outlet shafts, the openings of which were at the floor-level. In the case of very large rooms the inlets might be on both sides of the rooms, and the foul air drawn through apertures formed at intervals in the floor. In any case the position of the outlet should be such as would ensure an absence of inconvenience and draught.

Mr. Tucker continued:—In no case should cold fresh air be drawn through the floor, or draughts will be produced about the feet of the occupants. The outlet shafts should be carried up through the roof, and terminate each with a louvred top at some height above the ridge of the roof.

The advantages of this system are—

(*a*) The purest air available can be used.
(*b*) It can be cleansed, warmed or cooled, as desired.
(*c*) It can be changed, even eight or ten times in an hour, without causing draughts.
(*d*) Can be equally distributed to every part of the room.
(*e*) All vitiated air can be driven out.
(*f*) Efficiency is secured independent of the force of the wind.

The disadvantages are—

(*a*) The long lengths of tubes or ducts so necessary to this system which are liable to become coated with dust, and, consequently, be a means of polluting the air as it passes through them.
(*b*) The great cost of the installation and the constant cost of working it.
(*c*) Great care and intelligence required in working it

Domestic Rooms.

Each room should be supplied with fresh air by means of a suitable ventilator having an adjustable valve controlled by a cord. It should be fixed in a drop-channel opening in the outer wall near the ceiling and farthest from the fireplace. The opening should be protected on the outside by a galvanized hinged grating. The foul air should escape by means of a flue, of suitable size, formed in the chimney stack between the smoke flues, with an opening into it near the ceiling protected by a grating. The heat of the smoke flues would ensure a more rapid escape of the foul air. The products of combustion from gas should be conducted into the foul-air flue by means of a ventilator in the ceiling In certain cases, as in living rooms, a portion of the incoming fresh air might be warmed by means of a ventilating grate of approved construction. All inhabited rooms should have fireplaces for ventilation.

Large Rooms, Halls, Churches, &c.

In this class of building the fresh air is usually supplied by means of Tobin's tubes. These should be of a suitable size and sufficiently numerous to ensure that the air is sufficiently split up so as not to produce a draught. When practicable, the fresh air passing through them should be warmed by means of hot-water or steam coils, placed in suitable chambers in communication with them. The air should enter the Tobin's tubes as much above the ground as practicable, to avoid ground impurities. It is advisable to place "direct" or "direct-indirect" radiators under the windows. If desired, they may be placed in cases or chambers; this is a good arrangement, as it effectually prevents cold draughts being produced by the cooling effect of the glass of the windows. The foul air should be removed by exhaust shafts terminating above the ridge of the roof, each surmounted by a cowl having considerable extracting power when acted on by the wind—when there is no wind the current should be maintained by gas jets, or a hot-water or steam coil placed in the lower end of the cowl, or by a cast-iron stove-pipe fixed in the centre of the shaft terminating above the cowl.

Hospital Wards.

It is possible that, as a rule, natural ventilation is best suited for hospital wards, especially when they are of ample cubic capacity, particularly as the open-air treatment by widely-opened windows is now being practised, even in certain London hospitals, with beneficial results. No doubt, air maintained at 60 degs. Fahr., as in the plenum system, is somewhat enervating and depressing for hospitals; whereas the results of the open-air treatment would appear to show that a good supply of fresh cool air invigorates the system and increases the power of its resistance to germs, inasmuch as cool air is condensed air and consequently imparts a larger quantity of oxygen into the system.

Schoolrooms.

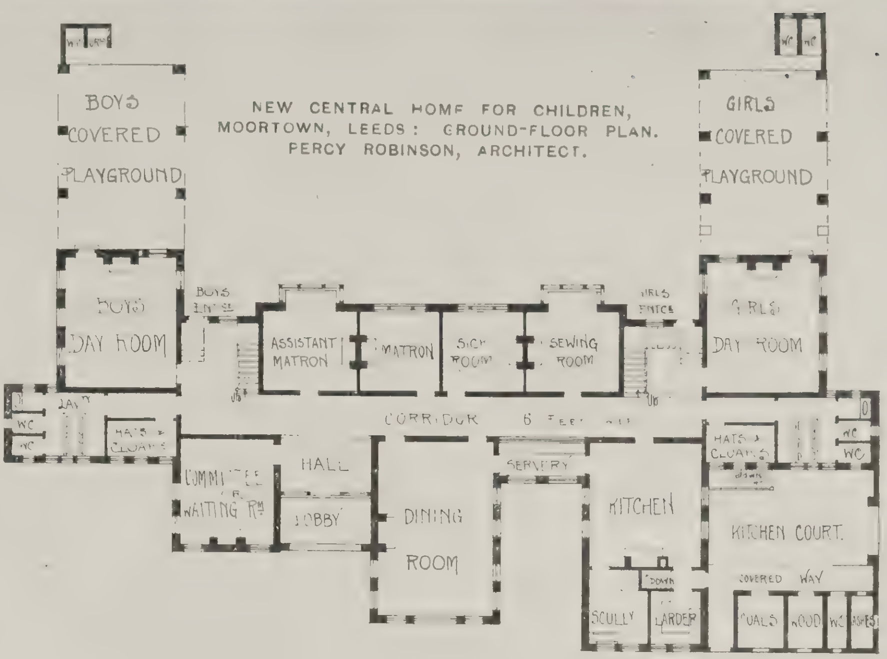
It is maintained on good authority that the plenum system is the best for large schoolrooms, as it ensures an equal distribution of warm pure air to each scholar. It has been ascertained that more mental vigour and increased working power are obtained with this system of ventilation than with natural ventilation. It is stated that Dr. Kerr's observations made on the air in natural- and mechanically-ventilated schools at Bradford, when over 250 tests were made for CO_2 during $2\frac{1}{2}$ hours of afternoon school-work, showed that in the naturally-ventilated schools the CO_2 gradually increased from about 0·8 up to about 2·8 volumes per 1,000 cub. ft., whereas in those mechanically ventilated the amount of CO_2 remained steadily at 0·8 per 1,000 cub. ft. all the time. The plenum system would be too expensive for small schools, consequently natural ventilation must be employed in these.

Barrack-rooms.

Perhaps there is no instance where ventilation is put to so severe a test as in barrack-rooms. The cubic space allowed is 600 cub. ft. per man, and the inlets and outlets for air are equal to 10 sq. in. per man. Half the quantity of the incoming air is warmed by the ventilating grate. The result of this system of ventilation is found to be satisfactory, although the area of 10 sq. in. would appear too small. No doubt a quantity of fresh air is admitted in this, as in other cases, by the doors and windows and carried off by the chimney flues; in this way it is possible each man may obtain 3,000 cub. ft. of air per hour—the air being changed probably about five times during that period.

Size of Ventilator and Flues.

This is important; it is, however, impossible to lay down a hard-and-fast rule. Generally, it is considered that 24 sq. in. of area per individual—independent of the chimney—will be found sufficient. Less than this will be sufficient if the outlet shafts exceed 25ft. in height. A velocity of 5ft. of air per second through an area of 24 sq. in. will produce 3,000 cub. ft. per hour—the quantity required. It should be stated that the foregoing quantity makes no allowance for a large supply of air which enters by the doors and windows, also through the walls, which are somewhat porous, and escapes up the chimney flue. Probably from 30 to 50 per cent. might be deducted as approximately representing this quantity, especially as an ordinary fire requires 3ft. to 4ft. of draught per second and a strong fire about 6ft. A velocity of 5ft. per second at the ventilators will not produce more than about 3ft. in the room, which is the maximum that can be endured when the temperature is about 50 degs. Fahr. The lower the temperature the less should be the velocity: 1 ft. per second is sufficient when the temperature is about 35 degs. Fahr.


NEW CENTRAL HOME FOR CHILDREN, MOORTOWN, LEEDS: GROUND-FLOOR PLAN. PERCY ROBINSON, ARCHITECT.

Position of Inlets and Outlets.

We may observe the following rules:—

(*a*) When the air is warmed before it enters the room it should enter at about 7ft. 6in. above floor-level on the opposite side to the fireplace (if any), and pass out at the floor-level on the same side of the room.

(*b*) When the fresh air is warmed by being heated in the room—by open fires, stoves, &c.—it enters cold about 8ft. from the floor, and it consequently falls to the floor underneath the foul or warmer air that has been longer in the room and which should pass out at ceiling level. In fact, it all depends upon the relative temperature of the air entering the room, as that is fresher than the air which has been longer in the room; if that is warmer than the air in the room, then there should be openings provided for the escape of the cooler and denser foul air at the bottom of the room. If, on the other hand, the air entering the room is cooler than the air longer in the room, then there should be openings for the escape of the warmer and lighter foul air at the top of the room.

Air-Space per Individual.

Natural ventilation requires more air-space per individual than is the case with artificial ventilation. The following are the requirements for some buildings:—

London School Board ..	130	cub. ft. per	scholar.
Common lodging-houses ..	300	,,	person.
Factories and Workhouses { day-time ..	250	,,	,,
Factories and Workhouses { over-time .	400	,,	,,
Barracks	600	,,	man.
Army Hospital Wards ..	1,200	,,	patient.
Standard for living rooms ..	1,000	,,	person.
Hospital Wards	2,000	,,	patient.

In buildings occupied for only a short period at a time—such as churches, schools, &c.—the air-space may be smaller than in buildings occupied for a longer period.

Mr. Tucker here concluded his remarks on ventilation and proceeded to deal with warming. Owing to the great pressure on our space we are obliged to hold over till next week our report of this section of the paper.

A. A. OF IRELAND.

THE ninth technical demonstration of the Architectural Association of Ireland was held, by permission of Dr. Traill, at the new Electrical Laboratory, Trinity College, Dublin, on March 12th, the demonstrator being Mr. Tatlow. There was a large attendance. After carefully describing the various electrical terms in common use, Mr. Tatlow dealt with the subject of wiring, stating that any wire exceeding No. 18 gauge should be stranded. Rubber insulation is the best form, but paper covered with lead is sometimes substituted, as it is less liable to attack from damp, in exposed positions. The casing and capping is usually of wood, but when the wires are bedded in walls they should be cased in steel tubing, either seamed or brazed, the latter method being more expensive, but giving better results in damp situations. In very wet places gun-barrel and white lead are necessary to fully protect the wires. Underground circuits are usually insulated with oil and paper laid in troughs filled with pitch. Having exhibited various samples of switches, the chief points of which should be a quick and long break, the demonstrator proceeded to deal with electric lamps and stated that low-efficiency lamps are preferable to the high efficiency. The principles of the new "Nernst" lamp were explained, and a sample compared with the ordinary incandescent light. With regard to plant, the gas engine gives as a rule a far better result than steam, unless the latter is used for other purposes. An oil engine should always have a good fly-wheel or intermittent brilliancy will result. The demonstration, which was fully illustrated by samples and experiments, concluded with a few remarks on accumulators, telephones and bells.

The last demonstration was held on March 19th at the premises of Messrs. J. F. Keatinge & Sons, Grafton Street, Dublin. Mr. Keatinge described the constituents of paint and the various finishings, samples of the latter being handed round for inspection. Having dealt with the composition of varnishes, pointing out no oil should be used in varnishing seats, the demonstrator described the differences between ordinary and patent distempers, and proceeded to exhibit various qualities of wallpaper. The manufacture of stained glass having been explained and samples inspected, the proceedings terminated.

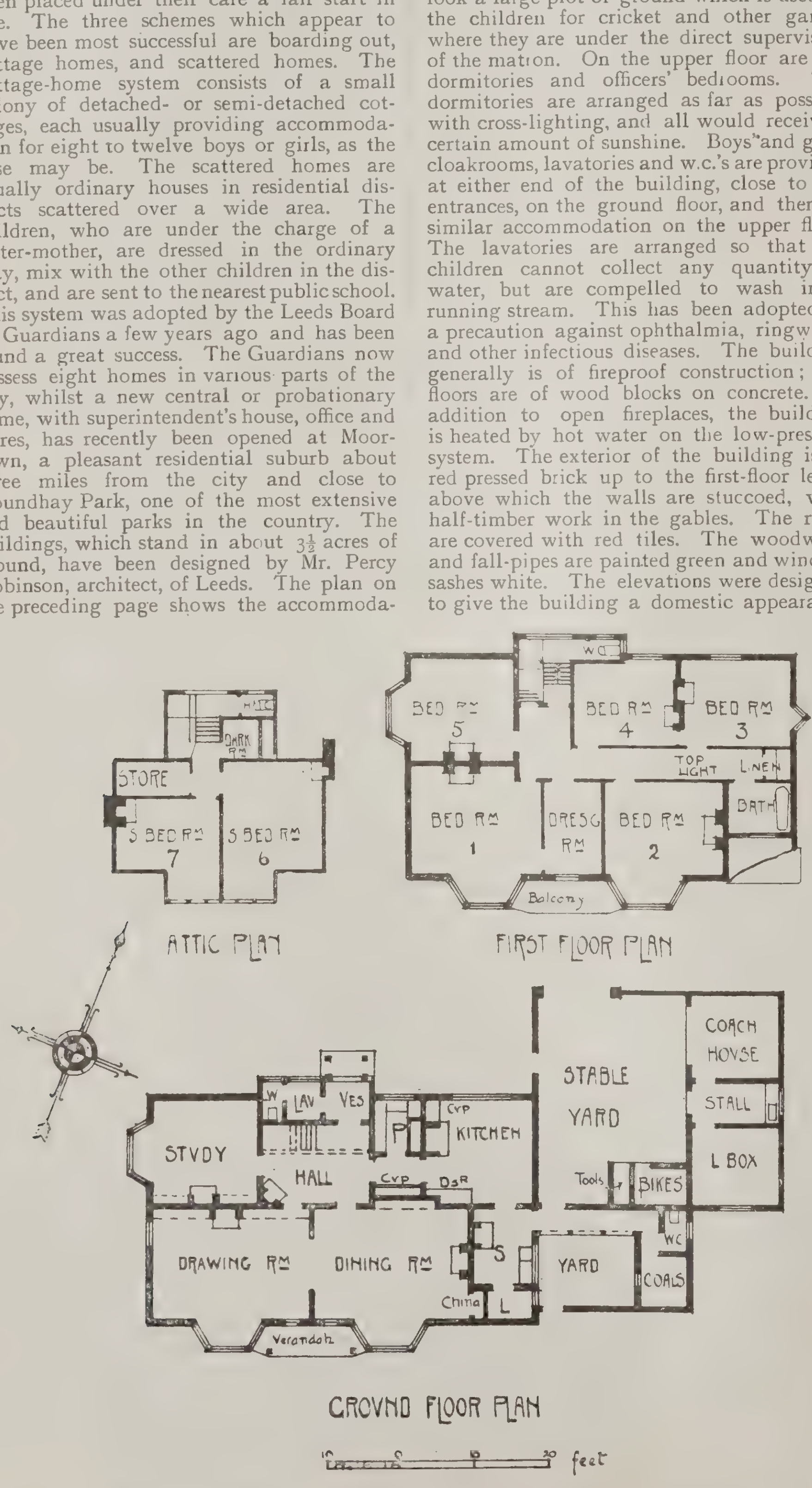
Bricks and Mortar.

Aphorism for the Week.

Through wisdom is an house builded, and by understanding it is established: and by knowledge shall the chambers be filled with all precious and pleasant riches.

PROVERBS XXIV. 3-4.

Our Plates. THE problem of dealing with pauper children has of late years been very prominent, and various schemes have been advocated and adopted by different "unions" with the object of removing the workhouse taint and giving children who by misfortune have been placed under their care a fair start in life. The three schemes which appear to have been most successful are boarding out, cottage homes, and scattered homes. The cottage-home system consists of a small colony of detached- or semi-detached cottages, each usually providing accommodation for eight to twelve boys or girls, as the case may be. The scattered homes are usually ordinary houses in residential districts scattered over a wide area. The children, who are under the charge of a foster-mother, are dressed in the ordinary way, mix with the other children in the district, and are sent to the nearest public school. This system was adopted by the Leeds Board of Guardians a few years ago and has been found a great success. The Guardians now possess eight homes in various parts of the city, whilst a new central or probationary home, with superintendent's house, office and stores, has recently been opened at Moortown, a pleasant residential suburb about three miles from the city and close to Roundhay Park, one of the most extensive and beautiful parks in the country. The buildings, which stand in about 3½ acres of ground, have been designed by Mr. Percy Robinson, architect, of Leeds. The plan on the preceding page shows the accommodation provided. This is really the headquarters of the whole system, whence stores, clothing, boots, &c., are issued by the superintendent to the various homes. A little further to the left is the main building, which provides accommodation for forty children. The sexes are kept separate, except at meal-times, when the common dining-room is used. Large day-rooms are provided at either end of the building for boys and girls, with covered playgrounds adjoining, to which children have direct access in wet weather. Between the boys' and girls' departments are the officers' rooms, a sewing-room for girls, and an emergency sick-room. A room is provided for the use of the committee, and also serves as a waiting-room. All the principal rooms face south and overlook a large plot of ground which is used by the children for cricket and other games, where they are under the direct supervision of the matron. On the upper floor are the dormitories and officers' bedrooms. The dormitories are arranged as far as possible with cross-lighting, and all would receive a certain amount of sunshine. Boys' and girls' cloakrooms, lavatories and w.c.'s are provided at either end of the building, close to the entrances, on the ground floor, and there is similar accommodation on the upper floor. The lavatories are arranged so that the children cannot collect any quantity of water, but are compelled to wash in a running stream. This has been adopted as a precaution against ophthalmia, ringworm and other infectious diseases. The building generally is of fireproof construction; the floors are of wood blocks on concrete. In addition to open fireplaces, the building is heated by hot water on the low-pressure system. The exterior of the building is of red pressed brick up to the first-floor level, above which the walls are stuccoed, with half-timber work in the gables. The roofs are covered with red tiles. The woodwork and fall-pipes are painted green and window sashes white. The elevations were designed to give the building a domestic appearance as far as possible harmonizing with the surroundings and avoiding any suggestion of the institution.—The house at Cabinteely, co. Dublin (Messrs. Clare and Ross, architects, Chelmsford) has just been completed for Mr. A. Marrable. The accommodation is shown by the plans on this page. The house commands magnificent views of the Wicklow Hills and the Irish Sea in the distance, and stands on about an acre and a quarter of land. Owing to the scarcity of bricks in the district and the expense of masonry the house is constructed of a framework of steel filled in with cement-concrete, the lower part being rendered in cement, the upper part in cement rough-cast, and the roof formed with plain Broseley tiles. The joinery throughout the interior is in pine of various colours left clean from the plane and varnished. The contract, including drainage, was £1,637. Mr. A. Fraser, of Bray, co. Wicklow, was the builder.—The north porch of Wells Cathedral agrees with the nave in everything except that there is an abundance of detached shafts (of Doulting stone). It dates from the early part of the thirteenth century, with later additions. Two plans are given on p. 92.



HOUSE AT CABINTEELY, CO. DUBLIN. CLARE AND ROSS, ARCHITECTS.

Contemporary Architecture. AT last week's meeting of the Glasgow Architectural Association Sir John Stirling Maxwell, M.P., delivered a lecture on "Contemporary Architecture from a Layman's Point of View." He said that if we were to rise to anything like a true estimate, we must begin by discounting the charms of age, and even look with just eyes on buildings which were old-fashioned, although not old. Apart from new needs and new materials, architecture moved but slowly. The nineteenth century was full of incentives, and they were more fully recognized in its buildings than one was apt to remember. It was never difficult to recognize a building of the past age nor the decade to which it belonged, and it would be just as easy for the student of the future to do so on account of the changes of planning as well as of materials. What merely spelt "old-fashioned" for us would to the critic in the next century mark an alteration of style. Perhaps the critis would say, "We will not dispute that your buildings are recognizable; we complain that you have drawn on the past for your style instead of inventing one of your own." That complaint, however, disregarded the fact that every age had drawn on those which had gone before. The limitations of human ingenuity made this inevitable. No style had ever been more than a development of something which had preceded it. The immense number of buildings which modern civilization required had made such an idea as the one expressed by critics undesirable as well as impossible. Our city would be dull indeed unless the new style advanced more quickly than styles had done in the past. Let no one suppose that there was anything new in searching for models from the past. Ancient Rome borrowed from Greece and the Renaissance from both. He had been at some pains to defend architects from the unjust charge of want of style, partly because it was made too commonly and partly because they were apparently taking it so much to heart. So long as a building was nothing more than an expression of the purpose for which it was intended, so long, in other words, as every detail was dictated by the needs of the case alone, the architect might disregard tradition and yet be sure of an admirable result. The moment, however, that he overstepped these limits and chose a moulding, the form of an arch, or, still more, when he added any ornament to his building, he found himself following tradition. New needs and new materials the architect would always welcome as affording new opportunities.

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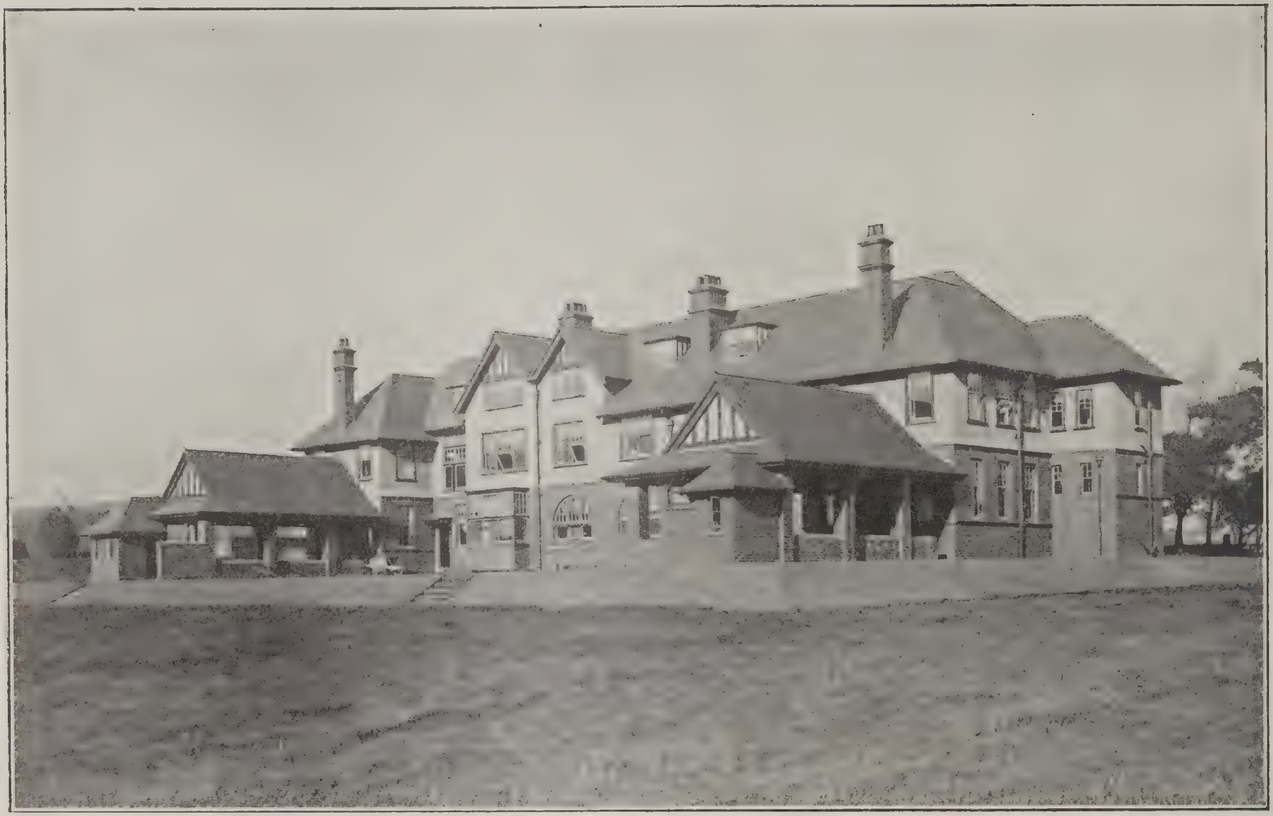
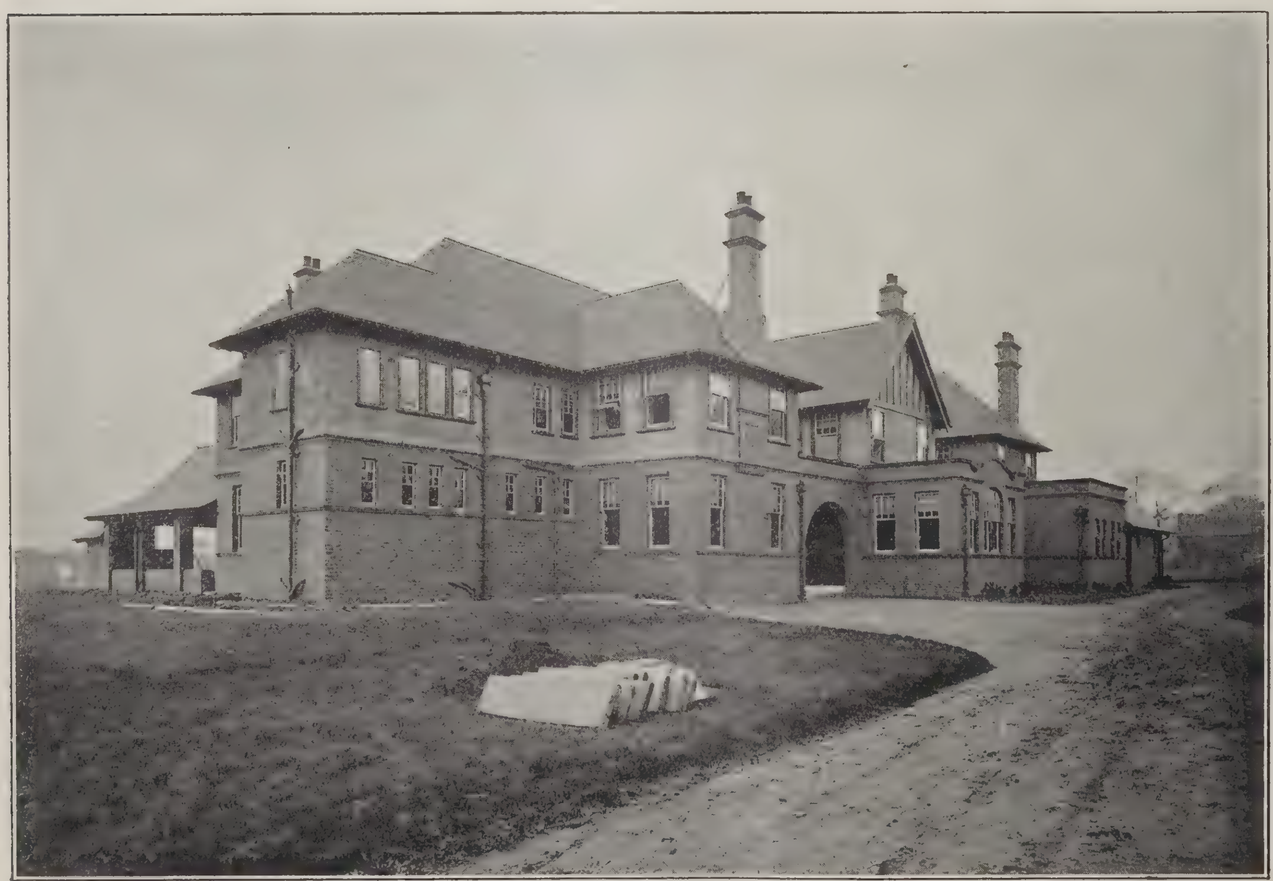


VIEW FROM THE SOUTH-EAST.



VIEW FROM THE NORTH-EAST.

Central Home for Children Moortown Leeds. Percy Robinson, Architect.

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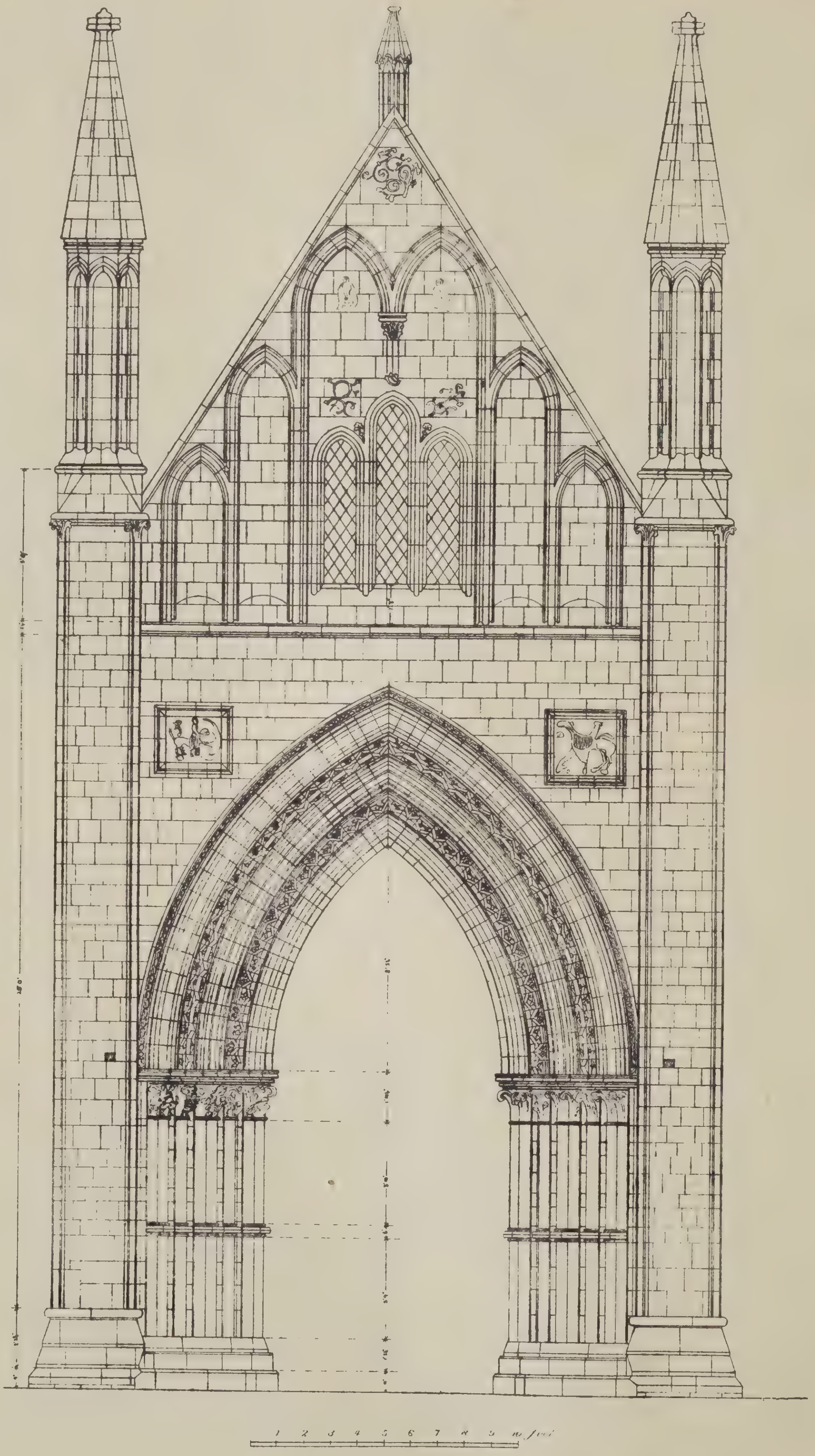
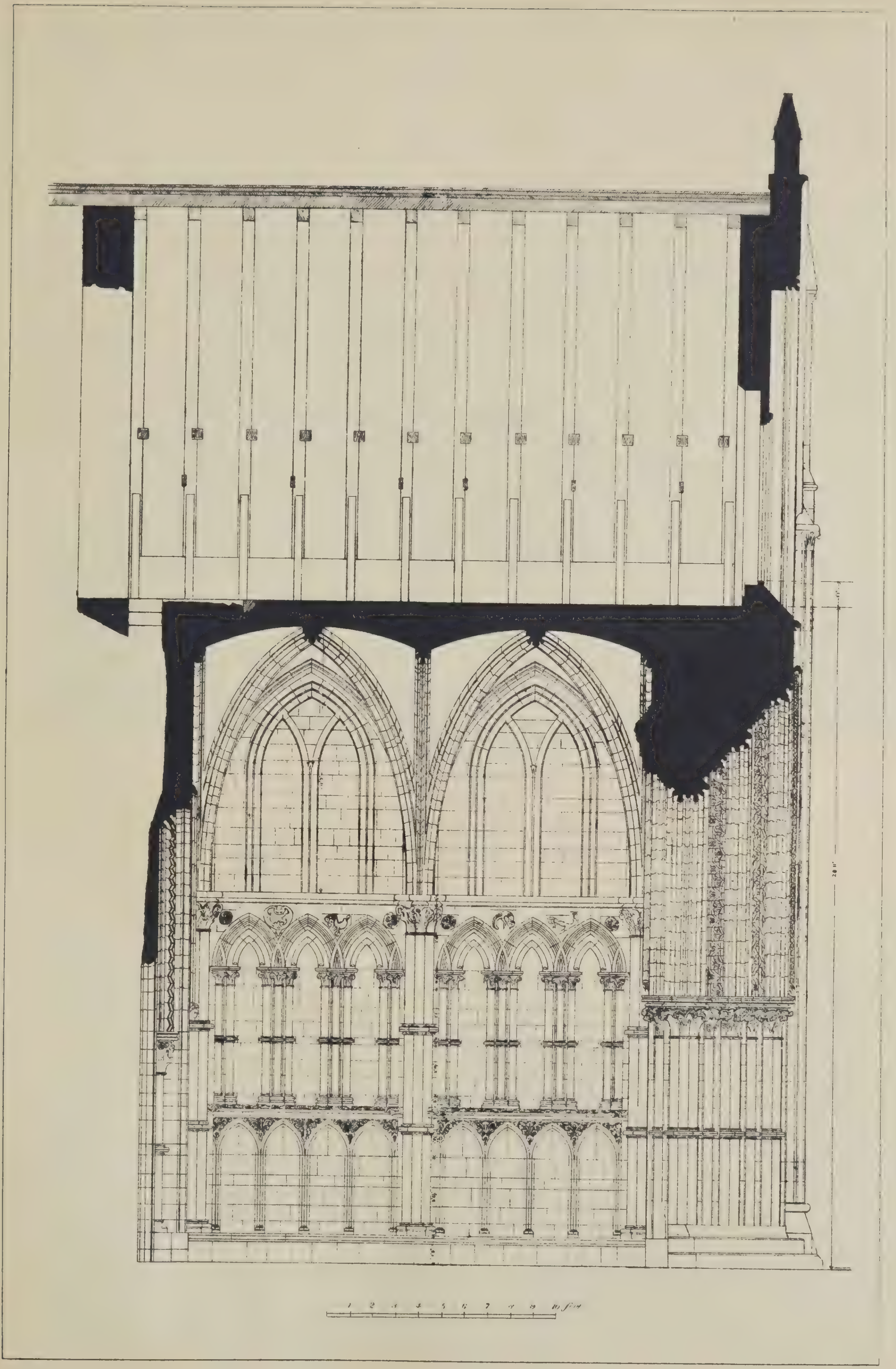


WELLS CATHEDRAL: NORTH PORCH, NORTH ELEVATION.

Measured and Drawn by H. Cayley, A.R.I.B.A.



WELLS CATHEDRAL: NORTH PORCH, SECTION LOOKING WEST.
MEASURED AND DRAWN BY H. CAYLEY, A.R.I.B.A.

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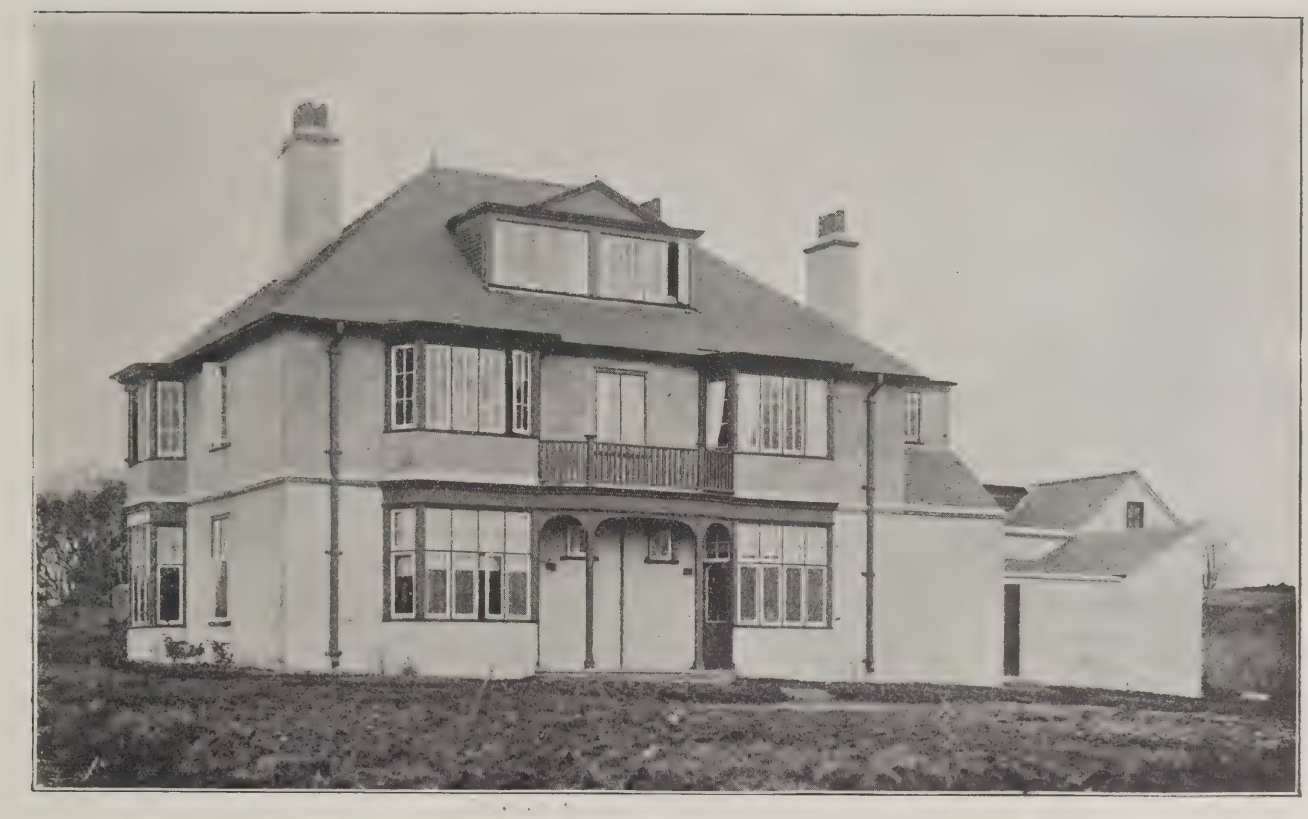
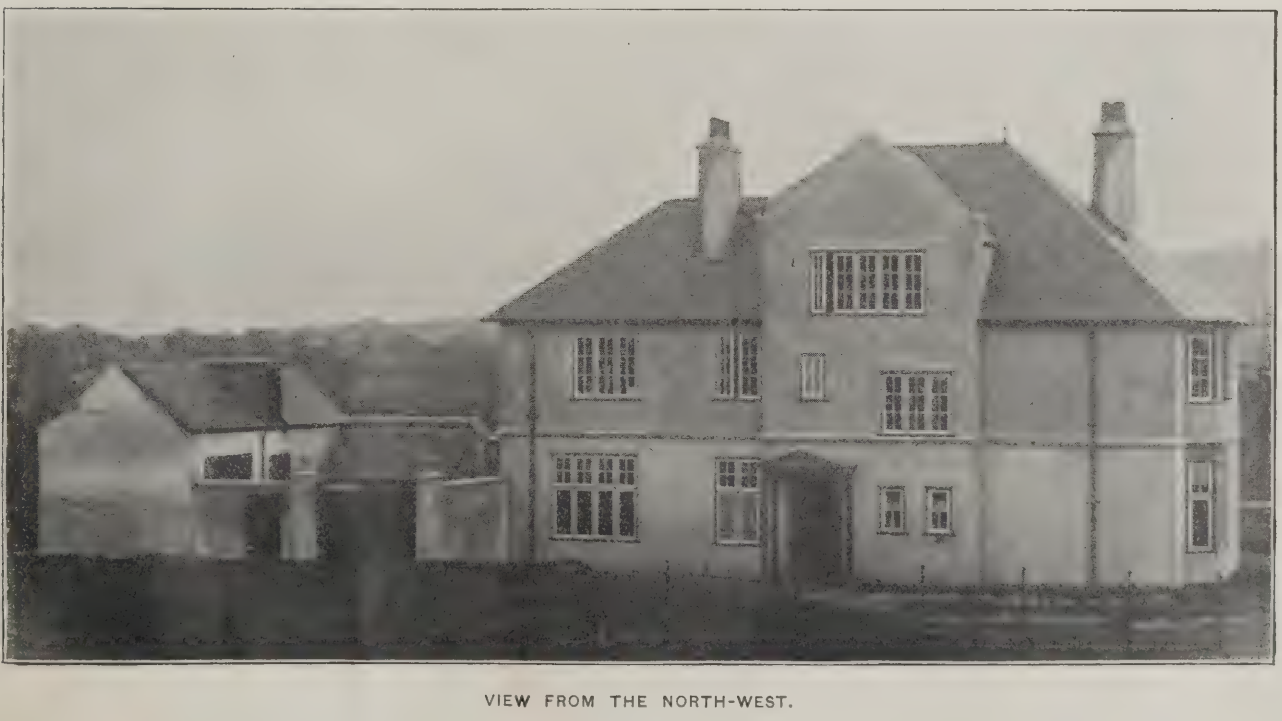


VIEW FROM THE SOUTH-WEST.



VIEW FROM THE NORTH-WEST.

House at Cabinteely, Co. Dublin. Clare and Ross, Architects.

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Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Infectious Diseases Hospitals.

R. H. B. writes: "Which is the most up-to-date handbook on what is necessary to observe in planning infectious diseases hospitals?"

"Cottage Hospitals," by Sir H. C. Burdett, 8s. 6d. (B. T. Batsford.)

Book on Bakehouses.

Doncaster.—E. H. M. writes: "Do you know of any publication on the construction of bakehouses?"

We do not know of any such book.

Stephenson's "Estimating."

London, E.—G. N. K. writes: "Referring to the reply to 'O. S.' (Stourbridge) on p. 55 of your issue for March 11th, I have seen a book by Stephenson entitled 'Repairs: How to Measure and Value Them.' This is probably what your correspondent requires."

Air-Space at Rear of Buildings.

Bakewell.—H. A. R. writes: "I propose to take down an old cottage, stable, cowhouse and privy which stand on a steep slope and erect two cottages in their place. From the accompanying plan (not reproduced) you will see that I propose to cut back the rock, leaving a 5ft. passage-way. The urban district council refuses to pass the plan, saying that it does not comply with their by-law 53 (with regard to open spaces). I contend that my boundary is the boundary of the site, averaging 27ft. from the cottages; but the Council contends that the rock cutting is the boundary and I must cut back 10ft. (in limestone rock), and that they can compel me to cut back 20ft. Who is right?"

The local sanitary authority appears to be acting strictly within their legal rights in declining to pass the plans under such conditions. Section 157 of the Public Health Act, 1875, provides for every urban authority making by-laws with respect to the sufficiency of space to secure a free circulation of air in and about domestic buildings. The local by-laws not only require that there shall be an open space of not less than 150 sq. ft. at the rear of the building, but that such open air-space shall extend *laterally* throughout the entire width of such building. The height of the proposed building being 25ft., the by-laws further require that such open space shall extend laterally to a distance of 20ft. It does not necessarily follow that because the boundary of your property is more than 20ft. from the proposed building such boundary is to be considered as providing the requisite *lateral* open space for that distance. For all practical purposes you propose erecting a building below the natural contour or level of the ground by constructing it in an excavation cut into the side of the hill, and thus creating a new ground level for the building, but neglecting to provide the essential open space at the rear of the building. T. E. C.

Birtley.—B. B. writes: "The local by-law 54 states that an open space of not less than 150ft. super. shall be left in the rear of a building and shall extend laterally 10ft., 15ft. or 20ft. from every part of such building to the boundary of any lands or premises opposite or adjoining. Is this taken to the outside or inside of my yard wall?"

The necessary width is to be measured from every part of the building to the boundary of any lands or premises immediately opposite. In this instance the boundary is the inner face of the yard wall, so that in measuring the width of open space required the dimensions should be taken only as far as the face of the wall. According to the wording of the clause, the thickness of the boundary wall cannot be included in the width of open space, for such open space must be free from any erection except a water-closet, earth-closet, privy or ash-pit. In the case of *Adams* v. *Bromley Local Board* it was decided that a small wooden fence 3ft. 6in. high was an erection within the meaning of the by-law, and so formed an encroachment on the air-space as required for the purposes of the by-laws made by the local sanitary authority under the powers conferred on them by the Public Health Act. T. E. C.

Sound-deadening Floors.

Crieff.—Constant Reader writes: "I have to deaden a large billiard-room floor the underside of which is covered with ¾in. lining, forming the ceiling of a lecture-room below. I cannot lift the floor as the room cannot be closed. If a layer of slag-wool 2in. or 3in. thick were laid on top of the lining, would this make the floor soundproof? We could manage to put in the wool by lifting a flooring board here and there. Or would you advise taking off the lining and putting on silicate slabs nailed to the underside of the joists and then re-lining on the underside?"

A layer of silicate cotton on the lining alone would not be sufficient. We advise you to replace the lining with silicate cotton slabs, with a 2in. layer of silicate cotton above.

Water in Cellars.

London, S.E.—G. N. K. writes: "A cellar became flooded with 6in. or 7in. of water. The floor, about 9ft. below ground-level, is of cement-concrete. I am told that the water mains are about 3ft. below ground, and that the cellar floor is at a lower level than the sewer. The water was pumped out, and inspection showed what appeared to be a spring rising through a joint in the footings. It has been intermittent in action. Can you suggest that it is anything but a spring; and what do you recommend to be done?"

Apparently the flooding of the cellar is of recent occurrence. Assuming that this is not caused by an adjacent defective water-main, service-pipe, or storm-water drain, it is probable that the water arises from a ground spring or percolation of water occasioned by the late excessive rainfall. The level of the ground water in the locality may have occasionally risen to an abnormal height from various causes, the increased pressure thus forcing the water through some weak joint in the foundations. During the past few weeks we have observed in some localities near the sea that the high spring tides, combined with the heavy rains, have temporarily raised the ground-water level much above the usual height in those districts. If the height and general arrangement of the cellar permit, probably the most economical and satisfactory remedy would consist of a bed of cement-concrete 6in. thick laid upon the existing floor, and finished with a floated face. The walls might also be rendered with cement to a height of 4ft. or 5ft. Should this not effect a cure, then line the floor and walls with asphalt. T. E. C.

Councillors as Clerks of Works.

Port Dinorwic.—E. J. writes: "The urban district council is constructing some waterworks for Port Dinorwic which will cost £2,400, and they have employed a member of the parish council to be clerk of works. (1) Have they the right to do so? (2) Who should employ the clerk of the works—the district council or the parish council?"

(1) Yes, as the works are apparently being executed for the urban district council, and the clerk of works appointed by them is not a member of that particular council, but of a neighbouring parish council in which locality it so happens that the necessary works in connection with the water-supply are situated. (2) According to the information given, the works are being carried out for the urban district council, and the clerk of works would be employed by them. T. E. C.

Concrete for Stable.

Chester.—W. S. writes: "It is intended to use the old bricks which formed a stable floor as hard core for a concrete floor which is afterwards to be rendered with cement and limestone chippings. Will the ammonia with which the bricks are more or less impregnated be detrimental either to the concrete or the cement above?"

The aggregate would not seriously affect the strength of the concrete, but will probably cause efflorescence. We advise you, if the bricks are used, to adopt a proportion of 5 of aggregate to 1 of good Portland cement.

QUANTITY SURVEYORS.

Proposed Association.

A MEETING of London and provincial quantity surveyors was held on March 6th at the offices of Mr. F. B. Hollis, 17, Bedford Row, London, W.C. (Mr. W. Hoffman Wood, of Leeds, in the chair), when it was resolved to seek the co-operation of gentlemen favouring the formation of an association solely for quantity surveyors, which it is proposed to call "The Quantity Surveyors' Association." It was resolved "that in the formation of the Association the value and importance of the Surveyors' Institution be fully respected and recognized, and that that body shall be courteously approached to assist in the registration of the Association, and that members of the Surveyors' Institution who are practising as quantity surveyors be invited to also join the distinctive Association"; it was further resolved that none but qualified quantity surveyors be admitted to membership.

The main objects of the proposed association are briefly as follows:—

1. To uphold the dignity and importance of the profession, and to provide the means for quantity surveyors to meet and discuss subjects of interest and to settle cases of difficulty.
2. As a guarantee of efficiency and fair dealing as between the building owner and the builder.
3. As an additional means of ensuring the confidence of architects.
4. To encourage uniformity of practice.

It was further resolved at the meeting that the founders' first annual subscription should be one guinea, which should cover entrance fees. After the registration of the Association it is suggested that the entrance fee shall be five guineas and the annual subscription two guineas.

A circular letter has been sent to all London and provincial quantity surveyors (so far as their names and addresses can be obtained from directories and from the secretaries of architectural associations), accompanied by a post-card on which it has been requested that opinions about the proposal should be expressed. The honorary secretary (Mr. Hollis) will be glad if any quantity surveyor who has been omitted will communicate with him at once.

A general meeting will be called at an early date to elect a president, officers, &c.

MODERN LONDON BUILDINGS.

Having received numerous enquiries on the subject, we thought it useful to have a list compiled of the principal buildings erected in London during the last twenty-five years. In compiling this list the Editors have met with much difficulty. The pages of this and other technical journals have been consulted and put largely under contribution, and our thanks are tendered to our contemporaries for the large amount of information which was thus obtained. Still, inaccuracies and omissions must be inevitable in such an undertaking, and we should be much obliged to any of our readers who would kindly write to us with corrections and additions. As far as it is possible to do so the buildings are dealt with in districts, and, as will be seen, are gathered together under the respective years when they were erected.

E.C. DISTRICT: PUBLIC AND SEMI-PUBLIC BUILDINGS.

Building.	Architect.	Approximate Cost.	Remarks.
1875.		£	
Bridewell Police Station, Fleet Street.	Horace Jones, City Architect.	—	
Liverpool Street Station, G.E.R. Railway.	Edward Wilson	—	The building covers 10 acres, and is 2,000ft. long and 90ft. high. The design is Gothic in character and is executed in white Suffolk brickwork with Bath-stone dressings.
1876.			
Old Bailey, Stables and Coach-Houses.	W. S. Witherington.	—	
1877.			
Grecian Theatre, City Road	J. T. Robinson	—	The theatre will accommodate 4,000 persons. It has a stage 60ft. deep. Now used as S A barracks.
1878.			
Carpenters' Hall, junction of London Wall and Throgmorton Avenue.	W. Wilmer Pocock	29,000	The building is in the Palladian style, and is erected of Portland stone. The Court-room measures 42ft. by 26ft. by 18ft. high. The luncheon-room is 28ft. by 24ft. by 18ft. high. There are the usual offices, &c., on the ground floor. The first floor contains a hall 76ft. by 38ft. by 36ft. high, and a drawing-room 42ft. by 30ft.
City Carlton Club, between St. Swithin's and Sherbourne Lanes.	R. Roberts	27,000	The building is of stone, and is capable of accommodating about 1,200 members.
City Liberal Club, Walbrook.	G. E. Grayson	32,000	The building, which has a frontage of 58ft. and a depth of 115ft., is erected in Portland stone, with mullions and columns of red Aberdeen granite. The carving was executed by Mr. T. Broomfield, and the foundations were carried down to a depth of 40ft.
The Temple Buildings, erected by the Inner and Middle Temple Benchers.	E. M. Barry and J. P. St. Aubyn (Joint Architects).	76,000	The building is erected of Portland stone, standing on a grey granite podium. The rooms are arranged in suites of barristers' chambers.
1879.			
Central Fruit and Vegetable Market, Smithfield.	Horace Jones, City Architect.	115,000	The market covers an area of 44,000ft. It comprises forty-one shops fronting on the four surrounding roads, and thirty-three shops inside the market.
Holborn Town Hall and District Board Offices.	H. L. Florence and L. H. Isaacs.	25,987	The site has a 100ft. frontage to Gray's Inn Road and 124ft. frontage to Clerkenwell Road. The public hall is 90ft long by 45ft. wide by 30ft. high, and will accommodate 1,200 persons. The board-room is 48ft. long by 30ft. wide, with committee-room, &c. The style adopted was Free Italian. There is a clock tower 100ft. high at the angle of the building, which is of red brick and Portland stone.
Infirm wards of Administrative Offices, St. Luke's Workhouse, Shepherdess Walk, City Road.	A. Saxon Snell	36,000	The wards generally are 80ft. long by 40ft. wide and 13ft. high; 800 cub. ft. of air-space are allowed to each patient, accommodation being provided for 930 inmates, besides administrative offices, &c. The cost is less than £38 per bed.
St. Bartholomew's Hospital (additions), Giltspur Street.	Edward I'Anson	—	The additions comprise a practical-classroom and museum. The elevation is in Portland stone and is Classic in style. The façade is 100ft. long and 75ft. high. The practical room is for 150 students.
Mercers' Company's Buildings, Poultry.	G. B. Williams	70,000	The buildings have a frontage to Poultry of 150ft., and are 70ft. to 80ft. in height and 80ft. deep. The ground-floor consists of large shops with Aberdeen granite piers, the upper parts of the elevation being of Portland stone. The Mercers' chapel is situated in the central portion of the building.
Merchant Taylors' Hall, Threadneedle Street and Cornhill (additions).	Edward I'Anson, Company's Architect.	23,000	The additions are Gothic in style and carried out in Portland and Spinkwell stones. The buildings are 50ft. high and the north block is 60ft. long. The court-room, measuring 37ft. by 24ft. by 20ft. high, is Elizabethan in character. A library, doctor's room, waiting-room, and domestic accommodation are also provided.
1880.			
Goldsmiths' Company's Buildings, Cheapside.	Ford & Hesketh	—	The frontage of the buildings is 80ft. in length and 70ft. high. The elevation is in Portland stone, the ornamentation being in polished granite, with a profusion of carving and sculpture.
1881.			
Inner Temple Library (additions.)	R. W. Edis	—	The building is faced externally with red bricks, the roof being surmounted by a flèche. The style is late Gothic, and the carving was executed by Mr. G. J. Frampton. There are two spacious apartments.
1882.			
Children's Hospital, Mark Street, Finsbury.	J. D. Sedding	—	
Bakers' Hall, Harp Lane, Great Tower Street.	Clarke & Shoppee	12,000	The new buildings have a frontage of 92ft. to Harp Lane and a height of 52ft. to ridge. The ground-floor elevation is of Portland stone, red brickwork being employed above. The interior is faced with white-glazed bricks.
1883.			
Curriers' Hall and adjoining Warehouses, Wood Street, London Wall.	John Belcher	—	The frontage is in red Mansfield stone.
Central Fish Market for London, Farringdon Road.	City Architect	430,000	The market has an area of 44,000ft., and consists of thirteen shops.
Council-Chamber of the Guildhall.	Horace Jones, City Architect.	33,249	The council-chamber is a duo-decagon in shape, having an internal diameter of 54ft. and a height of 61ft. 6in.
Leadenhall Market (rebuilding).	Edmeston	70,000	The angular frontage at the corner of Gracechurch Street is 70ft. in height and is of Portland stone. The Leadenhall Street frontage, 250ft. long, has shops on the ground floor, with offices over.
1884.			
Butchers' Hall, Bartholomew Close.	Alexander Peebles	—	
Hospital for Diseases of the Chest, City Road (new buildings).	J. O. Abbott	14,000	The buildings are 74ft. wide and 84ft. high, having a ground floor and three storeys above. The tower at the corner is of stock brickwork and is 114ft. high. The ground, first and second floors each contain three wards 31ft. by 18ft.
1887.			
Innholders' Hall, Little College Street.	J. Douglass Mathews	—	Parts of the old hall designed by Wren are preserved in the new buildings.
City of London Court of Law, Guildhall Buildings, 84, Basinghall Street.	Andrew Murray	13,637	The ground floor contains offices for clerks and bailiffs. The Judges' Court measures 45ft. by 26ft., and the Registrar's Court 36ft. by 26ft. The general entrance is in the centre of the façade to Guildhall Buildings. The style employed was Late Gothic, the walling being of Kentish rag, with moulded work in Portland stone. The hall and staircase are in Bath stone, the open-timbered roof being in oak.
1890.			
General Post-Office, St. Martin's-le-Grand.	Henry Tanner, H.M.O.W.	—	Area of floor space, 152,820 sq. ft. The buildings generally are faced with Portland stone, but in the courtyard glazed brick is freely used. All floors are of concrete with steel joists, and the roofs are asphalted flats.
1892.			
Home for Working Boys, Spital Square, E.C.	W. H. Seth-Smith	6,000	The premises accommodate eighty boys. The upper part of the building is arranged in dormitories. In the lower part of the house are a dining-room, a meeting- and reading-room and a gymnasium, as well as a kitchen, bathroom, lavatory, &c.

Buildings.	Architect.	Approximate Cost.	Remarks.
1892 *—cont.*		£	
Premises of the Marine Society, 54 to 57, Bishopsgate Street, Within, E.C.	J. H. Smith - -	21,000	The buildings cover an area of 7,000ft. super. and consist of seven floors, including the basement. The ground-floor front is in red and grey granite, and the whole of the upper part of the front is of Portland stone. The carving is by Mr. Gilbert Seale.
Fruit & Vegetable Market, Charterhouse Street and Farringdon Road.	Alexander Peebles.	70,000	The buildings occupy an area of 30,000 ft. super, having frontages of 370ft. and 184ft
1893.			
Drill Hall of the London Rifle Brigade, Bunhill Row, E.C.	H. C. Boyes, F.R.I.B.A.	—	The hall is 180ft. long by 60ft. wide.
Record Office, Chancery Lane, E.C.	John Taylor, H.M.O.W.	To cost £160,000. Present buildings, £80,000.	
The Institute of Chartered Accountants, Moorgate Street, E.C.	John Belcher -	—	The building is executed in Portland stone. It contains a council-chamber and committee-room and general offices on the first floor. On the second floor is the examination hall, capable of containing 100 students. The library and reading-room on the ground floor is a lofty apartment with galleries and bookcases, and a panelled ceiling supported by stone columns. The grand staircase, halls and corridors are vaulted. The frieze which runs along the whole of the building under the second-floor windows was carved by Mr. Hamo Thornycroft, R.A., and the caryatides above the ground floor and other figures by Mr. Harry Bates, A.R.A. The subsidiary carving is by Messrs. Farmer & Brindley.
1894.			
The Bishopsgate Institute, Bishopsgate Street Without.	C. Harrison Townsend.	—	The principal features of the Institute are the library and the meeting-hall. The reading-room on the first floor accommodates about 200 readers, one portion of this room being arranged for women readers. The walls of the corridors and staircases are lined with tiles and the floors with marble mosaic. The floors of the library and hall are laid with wood blocks, and are of fireproof construction. The hall, 80ft. long by 40ft. wide, seats 520 persons. The principal elevation is carried out in light yellow terra-cotta. The two less important fronts are of red brick, with terra-cotta dressings.
Cripplegate Institute, Golden Lane.	Sidney R. J. Smith	20,000	The building contains a library, technical classrooms and a concert hall for 500 persons.
Offices for the Conservators of the River Thames, Victoria Embankment.	Hunt & Steward -	15,000	The ground floor is occupied by the accountant's and solicitor's departments. The first floor is taken up by the board-, chairman's- and committee-rooms, the board-room being about 20ft. high. The secretary's department is on the mezzanine floor and the engineer's on the second floor, while additional rooms are provided on the third floor and strong rooms in the basement. The building is next to Sion College, with which it harmonizes.
1895.			
Commissioners of Sewers' Offices, Basinghall Street.	Colonel Hayward-	—	The building has a total floor accommodation of 20,750ft. and the construction is fireproof throughout.
Turkish Bath, Broad Street House, New Broad Street, E.C.	G. H. Elphick -	—	The style adopted was Moresque, the saloon being decorated in an Alhambra fashion. Faïence is largely used for decorative purposes, and the baths are luxuriously appointed throughout.
1896.			
Offices of the Jewish Board of Guardians, Widegate Street, E.C.	Davis & Emanuel	—	The building comprises a block of offices four storeys in height. The front is of red brick relieved with stone and red concrete strings. The construction is fireproof throughout. On the ground floor are, on the right hand, clerks' offices, waiting-rooms and secretary's room, and on the left hand the committee-rooms and the waiting-rooms of the relief department. On the first floor are several committee-rooms and a board-room measuring 32ft. by 26ft. On the second floor is a large double-room forming girls' workroom, a dining-room for the girls and a room for the superintendent. On the top floor are the adult sewing classroom, the rooms for the clothing department and the caretaker's apartment. The basement contains the industrial department, including a master's room, clerk's office and waiting-rooms, also the loan department.
Fire Station, John Carpenter Street, Blackfriars.	Thomas Blashill (late Superintending Architect, L.C.C.).	21,000	The building is eight storeys in height, while the top of the look-out tower is 120ft. above the pavement. Accommodation is provided for two steamers, four horses and sixty men with their families.
1898.			
Moorgate Street Station (new superstructure).	Delissa Joseph -	18,000	The elevation is executed in Portland stone and occupies a frontage of about 155ft. to Moorfields and 90ft. to Fore Street Avenue.
Head Offices of the Metropolitan Asylums Board, Victoria Embankment.	Edwin T. Hall -	49,543	The building has a frontage to the river of 93ft. and to Carmelite Street a frontage of 127ft. The principal entrance is at the front angle, while there is a secondary entrance to the north-east staircase, giving access to the public gallery of the board-room. The building is of fire-resisting material throughout, including the roofs Externally it is of Portland stone and red bricks. The domes are of copper and the roofs of Westmoreland green slates. The board-room, which is on the first floor, accommodates 100 members, and has a reporter's gallery at one end and a public gallery at the other.
1899.			
Royal London Ophthalmic Hospital, City Road.	Keith D. Young and Henry Hall.	80,000	The hospital stands on a site 35,000ft. in area, having frontages to City Road, Cayton Street and Peerless Street. It contains 140 beds and 105 rooms, excluding the basement. The building is designed in a somewhat French type of Renaissance, and is faced with Portland stone, with a porch occupying the centre of the front. The construction of the building is fireproof, the floors being formed of iron girders protected by terra-cotta tubes and covered with coke-breeze concrete, and all the partition walls are either of brick or hollow terra-cotta tiles, filled with concrete. The corridor floors are finished either with terrazzo or with artificial stone, and the staircases are made of cast concrete with iron joists embedded therein, while the ward floors are laid with teak boards.
Bank Station, for the City and South London Railway Company, Lombard Street, E.C.	Sidney R. J. Smith	—	The building is of Portland stone with a granite base. The booking-halls and waiting-rooms are under the adjoining church and the road. The large shaft measures 73ft. 6in. by 24ft., and in it are placed the electric lifts.
1900.			
Shelter, Golden Lane, E.C.	D. J. Ross, City Engineer.	—	This shelter was erected at the City Mortuary, Golden Lane, for the use of persons during the disinfection of their homes after illness. The building is of brick, with stone dressings to doors and windows, and the floors are of concrete.
1901.			
Fire-Brigade Station, Redcross Street.	W. E. Riley, Architect to L.C.C.	—	The site has an area of about 4,660ft. super. and a frontage of 90ft. The station is built to first-floor level of Portland stone, with granite plinth, and above first floor of red bricks. The engine-room is 33ft. by 47ft. and is lined with glazed bricks. The stabling is to the rear of engine-room. The watch-room has an area of 180ft. and the recreation-room an area of about 400ft. super. The upper floors contain accommodation for officers and men.

THE SANDWICH BARBICAN.

CANON H. D. RAWNSLEY, honorary secretary of the National Trust, writing to the "Times," says: "Lovers of that little old Cinque Port town with its crooked streets, its overhanging house fronts, its Dutch chimneys, its curfew bell, and its two surviving city gates, will be much relieved to hear that the mayor and councillors have decided not to demolish and rebuild on a new plan, for their office needs, the ancient Barbican, but have, in consideration of the uniqueness of this picturesque fragment of old time, determined to do all in their power to conserve it, as far as possible, *in statu quo.* To this end they have called in the aid of the lately appointed diocesan architect, Mr. Jennings, of Canterbury, and have determined to renew the roof timbers and to replace the roofing tile for tile, to renew the worn-out weather boarding with weather boarding of the same material and pattern, to hack off about 2ft. of disfiguring cement and show the stonework of the base of the flanking tower of the gate, and to remove a comparatively modern small lean-to building outside the gate, which will do two things—allow the public sight of the until now hidden town wall, and add much effectiveness to the height and round of the tower. It appears—and I speak after careful inspection of the woodwork, stripped of its tiling—that had the town authorities not taken the matter in hand the roofing of gate and tower might have fallen any day and, for lack of plans and drawings to scale, have been irreparable. As it is, the Barbican will be the Barbican unchanged in general appearance for centuries to come."

Keystones.

St. Bartholomew's Hospital is to be reconstructed gradually.

The new Holborn-to-Strand Subway, which will be constructed simultaneously with the new roadway, is estimated to cost £279,000.

Little Bytham Church, Grantham, has recently been warmed by Messrs. John King, Ltd., engineers, of Liverpool, employing their latest improved hot-water heating apparatus.

Partnership. — Mr. Rowland Plumbe, F.R.I.B.A., of 13, Fitzroy Square, London, W., has taken into partnership Mr. Frank M. Harvey, A.R.I.B.A., who has been associated with him for a period of over twenty-one years. The practice will be continued under the style of Rowland Plumbe & Harvey.

Change of Address.—Mr. Henry James Wise, A.R.I.B.A., has removed his London address to 7, Great James Street, Bedford Row, W.C. Mr. Wise was for four years chief assistant in the offices of the Duke of Marlborough's architects, and he was engaged on the plans of His Grace's new town house in Mayfair.

The Church at Peel, erected in 1884 at a cost of £12,000, having been wrecked by the recent gale, £2,000 will be needed to repair it. The roof of the nave and north aisle was stripped off, and the slates, timber and part of the clearstory walls fell in on the seats, while a large stained-glass window at the west of the nave, which cost £500, was blown out and smashed to atoms.

The Subjects of the R.I.B.A. Competitions for 1903, of which a pamphlet has just been published (price 3d.), are as follows:—*Essay Medal,* for the best essay on "The delineation of architecture"; the *Soane Medallion,* "Design for a University theatre"; the *Tite Prize,* "Design according to the principles of Palladio, Vignola, Wren or Chambers for a Crescent in a Large City"; *the Grissell Prize,* "Design for a timber spire or lantern termination." The subjects of the other competitions are as formerly.

A new Workhouse Infirmary at Willesden has been erected in Acton Lane from plans by Mr. A. Saxon Snell, F.R.I.B.A. Messrs. Godson & Sons, of Kilburn, were the builders, and the foundations were put in by Messrs. Cowley & Drake, of Willesden Green. The installation of electric light and power was designed and supervised by Mr. Morgan Williams, M.Inst.C.E., and carried out by Messrs. Crompton & Co., of Chelmsford. The general engineering work, and also the kitchen fittings, were carried out by Messrs. Rosser & Russell, of Hammersmith, and the laundry and washhouse by Messrs. Summerscales, of Halifax.

The Congress of the Sanitary Institute to be held at Bradford from July 7th to 11th next will be presided over by the Right Hon. the Earl of Stamford. Section I. (Sanitary Science and Preventive Medicine) will be presided over by Professor Clifford Allbutt, M.A., M.D., F.R.C P., D.Sc, F.R.S., J.P., D.L. Section II. (Engineering and Architecture) will be presided over by Maurice Fitzmaurice, C.M.G., M.I.C.E. Section III. (Physics, Chemistry and Biology) will be presided over by Professor C. Hunter Stewart, D.Sc., M.B., C.M., F.R.S E. The lecture to the Congress will be given by J. Slater, B.A., F.R.I B.A. Eight technical conferences will also be held in connection with the Congress, presided over by Councillor W. C. Lupton, Prof. Thomas Oliver, M.A., M.D., F.R.C.P., J. Spottiswoode Cameron, M.D., B.Sc., T. H. Yabbicom, M.I.C.E., D. Drabble, M.R.C.V.S., Mrs. Moser, James Kerr, M.A., M.D., D.P.H., and Mr. Isaac Young.

At Deptford Cattle Markets new chill-rooms have been erected at a cost of £30,000.

The Annual Dinner of the Society of Architects, to be held at the Prince's Restaurant, Piccadilly, has been postponed from April 24th to Friday, May 15th.

The Nottingham Industrial Exhibition opens in May next. The various buildings are now being erected, and the extensive grounds which adjoin Trent Bridge laid out. The industrial and machinery halls are designed in the Oriental style. Application for space should be made to Mr. Charles I. Kiralfy, 19, Buckingham Street, Strand, London, W.C., where the plans of the exhibition can be inspected.

Kettering Library Competition.—Mr. J. A. Gotch, the assessor in the Kettering Free Library Competition, has awarded the first premium to the set of drawings numbered 37, submitted by Messrs. Goddard & Co., of Leicester; the second premium to No. 14, by Messrs. Sutton & Gregory, of Nottingham; and the third to No. 53, by Messrs. H. Tateham-Sudbury and P. D. Pryor, of Ilkeston. The cost of the building was limited to £6,500.

The Architectural Vigilance Society.—Mr. H. Heathcote Statham, hon. secretary of the Society, writes: "I am requested, on behalf of the above-named Society (the title of which has been altered from 'The London Architectural Vigilance Committee' to that of 'The Architectural Vigilance Society'), to notify that the Society is now formally constituted, and held its first meeting on Tuesday, March 17th, at the rooms of the Royal Institute of British Architects under the presidency of the chairman, Lord Windsor. The first meeting was necessarily almost entirely occupied with formal business; but we are now in a position to receive and deal with any communications which may be addressed to us on the subjects in which the Society is interested."

The Liverpool Architectural Society held a meeting last Monday week, Mr. Thicknesse presiding. Mr. Laurence Hobson, A.R.I.B.A., read a paper on the "Ancient Churches of Wirral." He said one of the characteristics of the Wirral churches was their massive square towers. The quaintest church in this particular district was that dedicated to the Holy Cross at Woodchurch, the site of which probably once contained a wooden edifice; the most picturesque in its situation was the Shotwick Church; while from an architectural point of view St. Andrew's, Lower Bebington, was imbued with the greatest interest. At West Kirby it was likely that the church existed in Saxon times, while the Neston Church tower probably belonged to the early part of the fifteenth century.

The Fire Exhibition: Recent Designs of Fire Stations.—The committee of the loan section of the impending international fire exhibition are particularly desirous of being able to present recent designs of fire stations that are of an instructive and up-to-date character and of some architectural pretensions. Architects who have designed and executed fire stations since 1885 are therefore requested to put themselves in communication with Mr. F. R. Farrow, F.R.I.B.A., joint hon. secretary of the section, 29, New Bridge Street, London, E.C., giving particulars and designs that could be exhibited, preferably accompanied by some print or photograph. The committee are desirous of hanging well-drawn elevations, perspectives or large photographs with ground-floor and first-floor plans. The drawings or photographs must be framed, but there is no limitation as to character of frames or margins. The drawings would have to be sent in by the middle of April, and will be hung until the close of the exhibition towards the end of September.

Mr. R. S. Lorimer, architect, of Edinburgh, has been elected an Associate of the Royal Scottish Academy.

The Bishopsgate Street Widening.—The Improvement and Finance Committee of the Public Health Department, at the Guildhall, has been instructed to confer with the London County Council on the subject of the scheme for widening Bishopsgate Street Without, between Angel Alley and the city's boundary to a uniform width of 70ft. The scheme is estimated to involve an outlay of £334,000.

The Glasgow Technical College Architectural Craftsmen's Society held a meeting at 204, George Street, on Friday, March 20th, Mr. C. Ernest Monro in the **chair.**—A paper was read by Mr. James McKim on the Glasgow mode of measurement. The author gave a sketch of the origin and method of application of the modes generally. He then treated the different modes individually, singling out and explaining many points of general interest. An animated discussion followed.

Obituary.

The late Mr. F. C. Penrose left an estate which has been sworn at £25,584, including nett personalty £3,101.

Mr. Robert Archer, builder, of Douglas, I.M., died last week at the age of eighty years.

Mr. James Randle, who carried on the business of builder, contractor and quarry-owner with Mr. G. E. Sayce, under the style of Sayce & Randle, at Widnes, Lancashire, died recently.

Mr. Christopher Eales, architect and surveyor, of 9, Welbeck Street, London, W., and Worthing, Sussex, died recently at the age of ninety-four years. Deceased was partner with his son, Mr. F. E. Eales, F.R.I.B.A., in the firm of Christopher Eales & Son.

Mr. Charles Godfrey Leland, better known as "Hans Breitmann," who in addition to his other literary efforts was well-known for his writings on art subjects, died at Florence last Friday. He was born in Philadelphia, Pa., in 1824.

Mr. William Taylor, builder, of Paisley, died last Sunday week at the age of sixty-two years. The masonwork of several of the principal new buildings of the town was carried out by him, and his latest work included a number of the new buildings in connection with the Causeyside improvements.

Mr. William Hubbard, builder and contractor, of East Dereham, whose death is announced, was largely identified with church restoration; during the first thirty years of his career he was engaged in the erection or restoration of about fifty churches. In addition he had an extensive general business. Mr. Hubbard was in his seventy-ninth year.

Mr. T. W. Middlemiss, builder, of Morpeth, died recently at the age of sixty-four years. He was born at Mitford, and was the fourth son of the late Mr. Thomas Middlemiss, builder, of Morpeth. Deceased was trained to his trade, and about 1870 succeeded to his business. By him it was greatly extended, and up till the time his health began to fail he was recognized as at the head of the building trade at Morpeth. While still a young man he was appointed borough surveyor to the Corporation of Morpeth, and about the same time was elected surveyor to the Morpeth Local Board of Health. In these capacities he did much useful work in connection with the property of the Corporation and the improvement of streets and footwalks in the town, as well as in connection with its water-supply. His increasing business and failing health led him to resign both of these appointments some years ago. The business itself was continued by those who acted under him.

Law Cases.

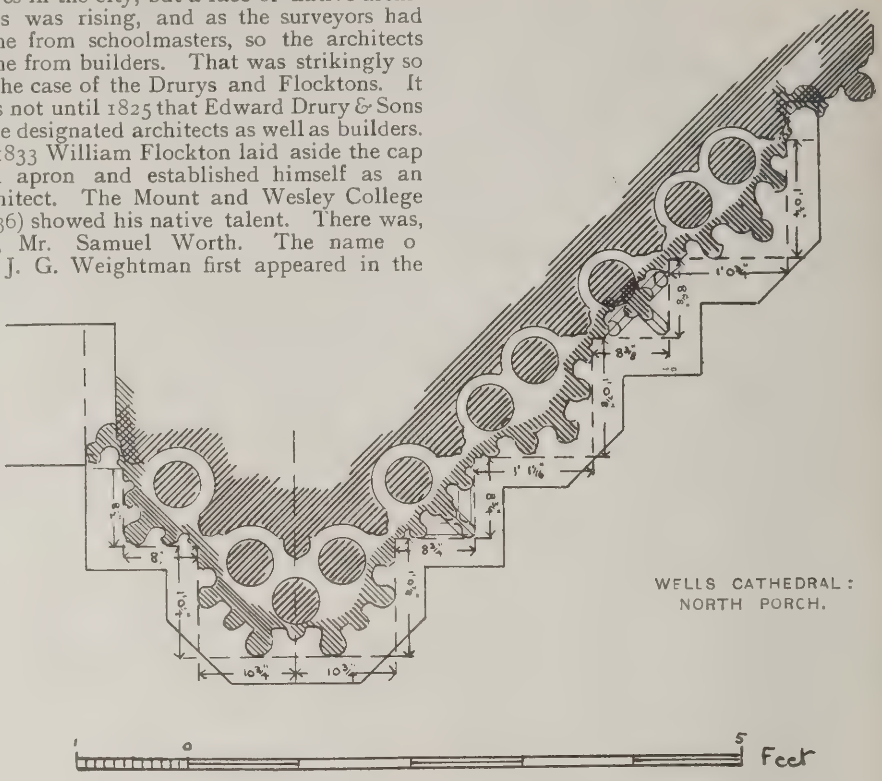
Drainage By-laws: Important Case in London.—At the Southwark Police Court on Wednesday last Mr. Cecil Chapman gave his decision in the thirty-three summonses taken out by the Southwark Borough Council against the Metropolitan Industrial Dwellings Co., the owners of the Ponsonby Buildings. These buildings were erected before the confirmation of the drainage by-laws of 1901, made under section 202 of the Metropolis Management Act, 1855; and in December, 1902, owing to the substitution of an iron pipe or drain for one of ordinary Doulton ware, the owners found it necessary to put new traps and pans connected with thirty-three water-closets in their buildings. They were then informed by the local authority that these new traps must be fitted with anti-syphonage pipes, in accordance with by-law 17 of the London County Council drainage by-laws, because the by-laws were made applicable to new work in old buildings as far as practicable. The defendants refused to comply, on the ground that these by-laws were not applicable and were unreasonable; and it was now further contended that they were *ultra vires*. The local authority thereupon took out thirty-three summonses for non-compliance in the case of each of the thirty-three closets, in order that these questions might be settled in a court of law. There did not appear to be any material dispute as to facts; but the defendants, in order to support their contention as to the unreasonableness of the by-laws, called evidence that the soil pipes were of such dimension, namely, of 5in. diameter, that the evils of syphonage, to prevent which these by-laws had been made, could not possibly occur, and that the expense which must be entailed by non-compliance with the by-law was so great as to make the application impracticable. Mr. Dodd, for the local authority, had contended that he had no right to consider any questions except the application of the by-law and its practicability. He (Mr. Chapman) had come to the conclusion that this contention was right. The by-laws admitted of no exception for the case of new buildings which contained a system of drainage where there was no probability of syphonage, and he did not think he was at liberty to create such an exception in the case of old buildings, to which the by-laws applied. If this were possible a dispute might be raised on each case, and the by-laws rendered practically valueless. He set aside, therefore, the question of whether the by-law was necessary or even useful in this particular case. Then, as to its practicability, he did not think there was any evidence that compliance with the by-law was not practicable. The figures given for the probable expenses went far beyond this case, and he did not consider they ought to affect his judgment. The words "so far as practicable," in his opinion, were intended for cases where large structural alterations or demolition of buildings would be necessitated by the application of the by-law, which was not the case here. He thought, therefore, that the application was practicable. He also considered that the work done involved the application of the by-laws to these traps. Mr. Danckwerts, K.C., contended that the work must involve a reconstruction of the rooms in which the water-closets were placed or, at any rate, of the system of water-closets; but he thought the words used in by-law 21 were intentionally wider than that, and specifically applied to every trap or apparatus connected with a pipe or drain. Two other questions remained: Were these by-laws under section 202 *ultra vires*, and were they unreasonable? On the first he was distinctly of opinion that they were not *ultra vires*. As to the second question, if he felt justified in pronouncing an opinion as to the reasonableness of the by-law as applied to this building, he should have great hesitation in deciding the case. He did not, however, feel so justified; but generally he could not doubt that it had been made by the London County Council and approved by the Local Government Board for good cause. In these circumstances, he could not hold that they were unreasonable, though he regretted there was no proviso for the case where it was proved that there was practically no danger of syphonage. There were other dangers, no doubt, connected with pipes of too large a diameter, and it might be that the authorities felt that the only safe way of dealing with so difficult and dangerous a matter was by such a hard-and-fast rule, and so long as it existed the local authority was bound to enforce it. He had no alternative but to convict the defendants; and there would be a fine of 40s. and £10 10s. costs on the first summons and 2s. costs on each of the others. In reply to an application on behalf of the defendants Mr. Cecil Chapman agreed to state a case.

Agreements under Seal with Local Authorities: Important Appeal Case.—The case of *Lawford* v. *Billericay Rural District Council* was recently heard in the Court of Appeal. The plaintiff sought to recover from the defendant district council remuneration for his services, as an engineer, in preparing a report and plans and performing other duties in connection with a sewerage scheme which was being carried out by the defendants. The defence was that the agreement on which the plaintiff relied was not a valid agreement binding on the defendants, because the common seal of the defendants was not affixed thereto. It appeared that in September, 1900, the attention of the defendants was called to the fact that the drainage of a portion of their district, called Shenfield Common, which was not within the scope of their original sewerage scheme, was in an unsatisfactory condition. The defendants, or a committee appointed by them under section 56 of the Local Government Act, 1894, thereupon passed a resolution that the plaintiff should be requested to visit Shenfield Common and make a report of what work was necessary to be done there and provide an estimate of the probable cost. The plaintiff visited the district, made a survey, and prepared and sent in a report and estimate. He was verbally instructed by the committee to act as engineer in respect of the extension work, and to render similar services to those rendered under an agreement of July, 1899 (under the seal of the council), by which he was retained as engineer, and this was confirmed by the defendants. It was admitted by the defendants that the plaintiff had full instructions for all the work he did, and that that work was incidental to the duties of the defendants as a district council, and that his services were in respect of work as to which some sewerage works were necessary. Mr. Justice Darling was of opinion that the agreement, not being under the common seal of the defendants, was not binding upon the defendants, and he accordingly gave judgment in their favour. The plaintiff appealed. --The Court allowed the appeal.—Lord Justice Vaughan Williams said the choice in this case really lay between the line of decisions of which *Clarke* v. *Cuckfield Union* (21 L.J., Q.B., 349) was one of the principal cases, or the cases inconsistent with that line of decisions. In *Nicholson* v. *Bradfield Union* (L.R., 1 Q.B., 620) these cases were dealt with at considerable length. According to the view which he took of the case, section 56 of the Local Government Act, 1894, did not enable the council to authorize the committee to do any act which was covered by the exception clause at the end of the proviso; for instance, the council could not authorize the committee to make any contract. Moreover, in the present case, in his opinion, the committee did not purport to make any contract on behalf of the council. Therefore for both of these reasons they must deal with the matter as if the contract alleged had been entered into by the council and not by the committee. In his opinion the decisions in *Clarke* v. *Cuckfield Union* and the other cases which had been decided on the same lines were to be preferred to the contrary decisions. The consideration in the present case was clearly executed; the defendants had accepted and availed themselves of the plaintiff's services and of his work. That being so, there was an implied contract to pay for them. The appeal must, therefore, be allowed, and judgment must be entered for the plaintiff.—Lord Justice Stirling and Lord Justice Mathew delivered judgment to the same effect.

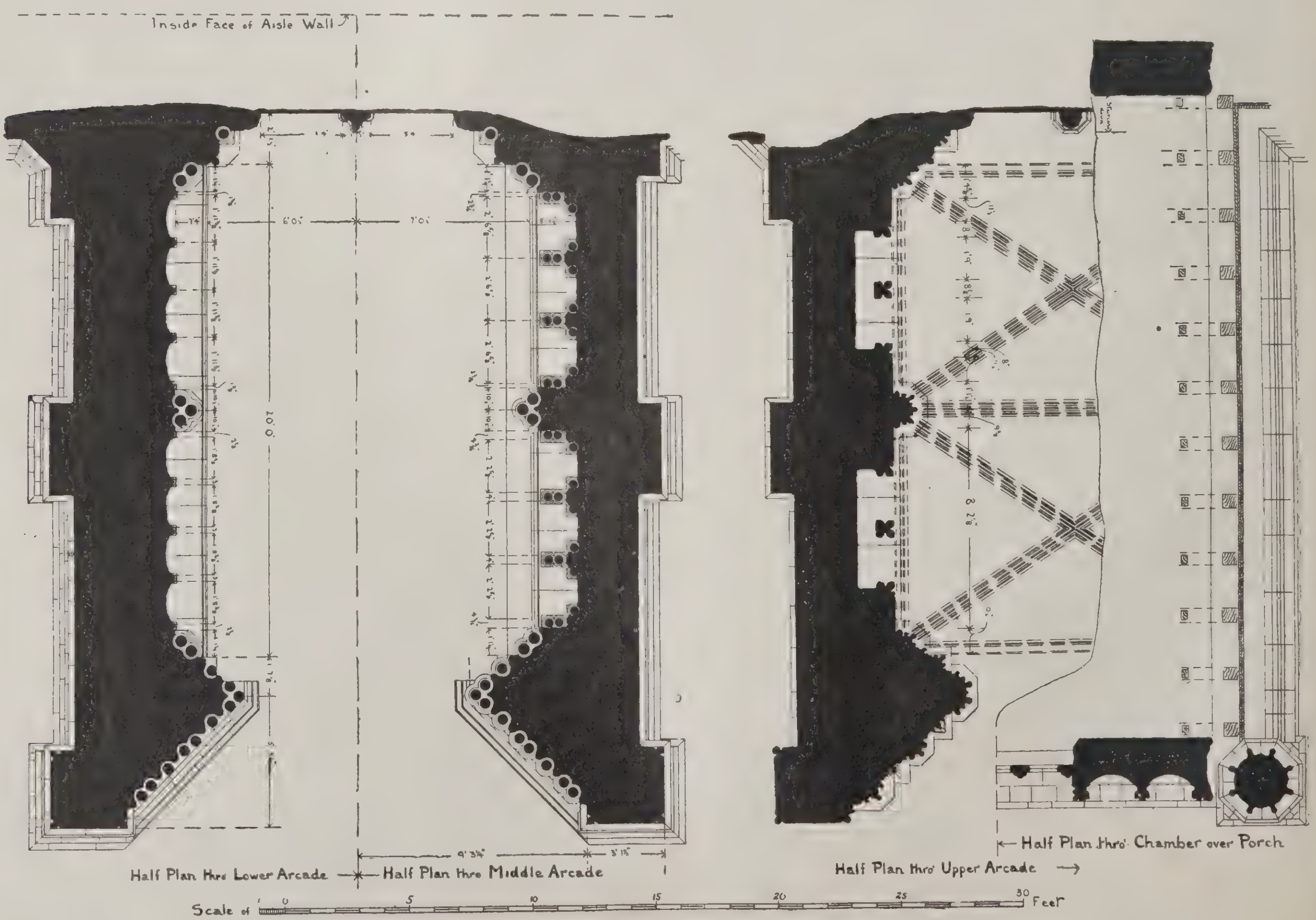
Coronation Stands: Claim by an Architect.—At the Southwark County Court on March 16th the hearing was concluded of a remitted action in which Mr. H. D. Earl, an architect of Edgbaston, Tower Road, Worthing, sued Messrs. Pattenden & Co., of London, S.E., to recover 50 guineas, balance of a sum of 200 guineas, fees for work done as architect for the defendants under a contract for the erection of a stand in the churchyard of St. Clement Dane's Church, Strand, for the Coronation procession. The defendants counterclaimed the sum of £657 10s., being £157 10s. fees paid for plans which it was alleged were wholly useless, and £500 for loss sustained through the plaintiff's alleged negligence.—The plaintiff's case was that the plans were seen by Mr. Pattenden and his builder and accepted, and a contract was entered into to pay him 200 guineas for his services as architect and 5 per cent. on the nett profits of the letting of the seats. The plans were approved by the Westminster Corporation, and work commenced. The builder, however, made alterations, with the result that the rake of the tiers was considerably varied, and the number of seats was lessened, while another 200 seats were done away with by Mr. Pattenden insisting on the provision of intersecting gangways, which were unnecessary. Defendant contended that when the stand had been erected he discovered a large number of seats did not command a view of the centre of the roadway, while rows had been left out. The builder could not have deviated from the plans if the plaintiff had looked after the job properly.—Thomas Elkington, the builder, and his foreman declared that all the alterations made were carried out after consultation with the plaintiff, and with his consent.—One witness declared that when he remarked about not being able to see the road from certain seats the plaintiff said he had made a mistake in his plans and was worried to death, while he had not had any sleep for a fortnight through it.—After two days' hearing his Honour said he was convinced that Mr. Earl was a very competent architect and thoroughly understood his business, but by some unfortunate mistake his plans were such that when the stand was erected, even after alterations approved by him, there were many seats which did not command a view of the roadway along which the procession would have passed. That was a most serious defect in the plans, and in view of that he considered the amount which the plaintiff had received was sufficient. As to the counterclaim, he would strike that out and not go into the reasons for doing so. He therefore gave judgment for the defendants on the claim, with costs, and with the consent of the defendants struck out the counterclaim. Judgment accordingly.

OLD SURVEYORS AND ARCHITECTS OF SHEFFIELD.

At the last meeting of the Sheffield Society of Architects and Surveyors (Mr. T. Winder in the chair) a paper on old Sheffield surveyors and architects was read by Mr. R. E. Leader, B.A. He said that Robert Wilson (1704-1733) might be regarded as the father of Sheffield surveyors: and at that time the local surveying was the natural application of the mathematical knowledge of the schoolmasters of the period, as a long line of schoolmaster-surveyors showed, including Ralph Gosling, to whom abiding gratitude was due for his plan of Sheffield in 1736. Mr. Leader then proceeded to mention a number of the surveyors who followed, making special reference to the Fairbanks and the Fowlers. Turning to local architects, he said there were practically none until about sixty or seventy years ago. Taking a survey of their older public buildings one was struck by the regularity with which whenever anything more important than dwelling-houses within the scope of intelligent masons was required, architects were imported from other places. When St. Paul's Church was built in 1719 Mr. Platts (who erected Wortley Hall) was called in: when the parish church had to be repaired in 1777 Mr. Thomas Atkinson was brought from York. To Mr. Charles Watson, of Wakefield, was entrusted the Waingate Town Hall, 1805, and the infirmary (1793) was designed by Mr. John Rowstone, of Birmingham. Woodhead & Hunt, of Doncaster, were the architects for St. George's Church in 1821, and the Surrey Street Masonic Hall (1823) and Grammar School in Charlotte Street in 1825. Carver Street Chapel (1804) was the work of a circuit minister who had been intended for an architect, and so on. Some of these outsiders did establish themselves in the city, but a race of native architects was rising, and as the surveyors had come from schoolmasters, so the architects came from builders. That was strikingly so in the case of the Drurys and Flocktons. It was not until 1825 that Edward Drury & Sons were designated architects as well as builders. In 1833 William Flockton laid aside the cap and apron and established himself as an architect. The Mount and Wesley College (1836) showed his native talent. There was, too, Mr. Samuel Worth. The name o Mr. J. G. Weightman first appeared in the directory for 1833, and in 1837 Mr. M. E. Hadfield was at the Corn Exchange. The elevating influence they exercised on the architectural renaissance of the town was reinforced in 1845, when the late Mr. Thomas James Flockton brought to his father's office a fresh knowledge obtained from a larger sphere than the city. With the firms of Weightman & Hadfield and William Flockton & Son opened a new era in the architectural development of the city, and their influence was unmistakably stamped on its streets: an advance shown by a comparison of St. John's, Park, with St. Marie's, Norfolk Row, or Holy Trinity, Wicker, with St. John's, Ranmoor.



WELLS CATHEDRAL: NORTH PORCH.


Inside Face of Aisle Wall
Half Plan thro' Lower Arcade
Half Plan thro' Middle Arcade
Half Plan thro' Upper Arcade
Half Plan thro' Chamber over Porch
Scale of 0 5 10 15 20 25 30 Feet

WELLS CATHEDRAL: NORTH PORCH. MEASURED AND DRAWN BY H. CAYLEY, A.R.I.B.A. *(See Centre Plates.)*

Builders' Notes.

Partnership Dissolved.—The partnership subsisting between Mr. J. Ord and Mr. J. H. Brettell, of Portman Street, Marylebone, builders, decorators and sanitary engineers, has been dissolved.

Colney Hatch Asylum.—In addition to the means of escape from fire already provided at the Colney Hatch Asylum, three new "fire-escape staircases" are now being erected there by the St. Pancras Ironwork Company.

Messrs. T. & R. Boote, Ltd., encaustic and glazed tile manufacturers, of Birkbeck Bank Chambers, Holborn, London, W.C., are opening a store at the Midland Railway Co's goods depot, King's Road, St. Pancras, N.W.

The Newcastle and Gateshead Joiners have decided to reject the proposal for a settlement of the dispute with the employers, which was to submit either to an immediate reduction of 6d. and another 6d. in three months' time, or to an immediate reduction of 1s. and have winter hours for men engaged in exposed work in shipyards on the Tyne.

Labour in February.—The Labour Department of the Board of Trade report that the state of employment in February was slightly better than in January, but continues rather worse than a year ago. The total number of workpeople involved in disputes which began or were in progress during February, 1903, was 13,186. The changes in rates of wages reported during February affected about 146,300 workpeople, of whom about 108,000 received advances and nearly 38,300 sustained decreases. The amount per head of the advances was, however, much less than that of the decreases, and the effect of all the changes was a nett decrease averaging 1½d. weekly per head of those affected. In the building trades employment is dull. It is slightly better than in the previous month, but shows little change as compared with a year ago. The percentage of unemployed trade union members among carpenters and joiners was 5·0 at the end of February, as compared with 6·4 in the previous month. The percentage for plumbers was 8·2 at the end of February, as compared with 6·7 in January.

The Building Trade of Hull is again threatened with a dispute of large dimensions, although it is hoped this will be avoided by the adoption of terms agreeable to both parties. The initiative in the matter has come from the masters, who are desirous of securing an alteration in the working rules. These rules were only agreed upon between the parties in May of last year, and it was understood they were to remain in force for at least two years. The employers, however, have served a notice upon the Building Trades Federation asking for an alteration. One of the principal changes they seek to effect has reference to short time during winter months. By the agreement come to last May, for five weeks before Christmas and for an equal period afterwards the men commence work at seven o'clock, having half an hour for breakfast, an hour for dinner, and cease at five o'clock. The masters want them to commence work at eight o'clock (having breakfasted before), have half an hour for dinner, and cease work at 4.30, the object being to secure the maximum amount of daylight each day. Another suggested alteration, and one which is strongly opposed by the men, has reference to the time when notice of a reduction of wages or lock-out can be given. By the existing rules that can only be given in May; the masters want the power to give it in November as well. The men have submitted counter-proposals. Negotiations are proceeding.

The Trials of a Surveyor.—A building at Llanfairfechan was recently ordered to be pulled down because it contravened the bylaws. When the surveyor to the urban district council arrived to carry out his instructions he found the builder warlike—aggressive enough, indeed, to throw three buckets of water on the surveyor, who then went away and returned another day with a policeman. The builder said that if they entered his premises there would be two or three of them in the hospital: at which the surveyor's men retired. The house is enclosed by chains back and front. Now the surveyor intends to lay an information for assault, and we await developments.

A New Building Stone.—Messrs. Woodford & Wing, of Stamford, the agents for the Edithweston Freestone referred to on p. 57 of our issue for March 11th, have recently also taken over the Peasenhurst quarries, near Ashover, lately worked by Robert Simpson. This bed of stone is of excellent quality and indeed it would be hard to find its equal in Derbyshire. In addition to its being one of the most durable of stones, it possesses a much desired feature in keeping its uniform and very pleasing colour. Entirely new and modern machinery is being laid down by the proprietors, who are already obtaining blocks of stone of very considerable dimensions. It is comparatively low in price. The stone is specially suitable for grindstones, kerbs, setts, &c., and orders can now be carried out, as the fixing of the machinery is nearly completed.

Fair Contracts Clause.—The special committee of the members of the Manchester City Council appointed to consider the fair contracts clause in its relation to im-portant building contracts held a meeting last week. Mr. George Macfarlane, the president of the Manchester, Salford and District Builders' Association, who is also the president of the Lancashire and Cheshire Builders' Federation, had an interview with the committee and suggested certain alterations of the scheme, and afterwards the committee heard the views of Messrs. G. D. Kelley and T. Fox, on behalf of the Manchester and Salford Trades and Labour Council. The committee expressed themselves as having been considerably assisted by the representations made to them. The difference between the two sides is said to be chiefly one of interpretation of the wording of the clause, and it is believed that after another meeting the committee will be in a position to submit a clause to the council which will be entirely satisfactory.

London County Council.—At last week's meeting of the Council the supplemental estimate of £24,500 was approved for the purchase of property and payment of compensation in connection with the construction of Greenwich Tunnel.—An estimate of £33,350 was approved for the additional widening of Southampton Row to 100ft. between Theobald's Road and Fisher Street, necessitated by the proposal to construct in the thoroughfare an open approach to the tramway subway.—Mr. Beachcroft moved a reference to the Highways Committee to report as to the comparative cost per mile of a tramway on the overhead system as compared with the conduit system, and whether there was any solid reason why the Council should not adopt the overhead system inside the county in those districts which are sufficiently removed from the crowded centre of London; but on a division the motion was rejected.—It was agreed that the Parks Committee be instructed to consider and report whether any measures are practicable in order to restrain owners from converting to building purposes small open spaces in the county of London which have been dedicated for use as "squares" and used as such for a long period of years.

Current Market Prices.

FORAGE.

		£	s.	d.	£	s.	d
Beans	per qr.	1	9	9	1	12	3
Clover, best	per load	4	7	6	4	15	0
Hay, best	do.	3	15	0	5	10	0
Sainfoin mixture	do.	3	15	0	4	5	0
Straw	do.	1	8	0	1	18	0

OILS AND PAINTS.

Castor Oil, French	per cwt.	1	1	0	1	2	2
Colza Oil, English	do.	1	3	0		—	
Copperas	per ton	2	2	6		—	
Lard Oil	per cwt.	2	13	0	2	14	0
Lead, white, groand, carbonate	do.	1	4	10		—	
Do. red	do.	1	0	4½			
Linseed Oil, barrels	do.	1	4	3		—	
Petroleum, American	per gal.	0	0	5¼	0	0	5⅝
Do. Russian	do.	0	0	4⅛	0	0	4¼
Pitch	per barrel	0	7	0		—	
Shellac, orange	per cwt.	5	14	0	5	18	0
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Home Melt	per cwt.	1	10	3	1	11	0
Tar, Stockholm	per barrel	1	1	6		—	
Turpentine	per cwt.	2	4	7½		—	

METALS.

Copper, sheet, strong	per ton	78	0	0		—	
Iron, Stafis., bar	do.	6	5	0	8	10	0
Do. Galvanised Corrugated sheet	do.	11	10	0	11	15	0
Lead, pig, Soft Foreign	do.	13	11	3		—	
Do. do. English common brands	do.	13	16	3	13	17	0
Do. sheet, English 3lb. per sq. ft. and upwards	per ton	14	10	0		—	
Do. pipe	do.	15	0	0		—	
Nails, cut clasp, 3in. to 6in.	do.	9	5	0		—	
Do. floor brads	do.	9	0	0		—	
Steel, Stafis., Girders and Angles	do.	5	15	0	6	5	0
Do. do. Mild bars	do.	6	12	6	7	2	6
Tin, Foreign	do.	134	10	0	135	0	0
Do. English ingots	do.	136	10	0	137	0	0
Zinc, sheets, Silesian	do	24	0	0		—	
Do. do. Vieille Montaigne	do.	24	10	0		—	
Do. Spelter	do.	23	17	6	24	5	0

TIMBER.

Soft Woods.

Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow	do.	5	5	0	6	5	0
Do. Pitch	do.	3	0	0	3	4	0
Laths, log, Dantzic	per fath.	4	10	0	5	10	0
Do. Petersburg	do.	7	5	0		—	
Deals, Archangel, Yellow—1st, 3×11	per P.Std.	14	0	0		—	
5th, 3×9	do.	8	10	0		—	
Do. Riga	do.	6	15	0	12	10	0
Do. Petersburg 1st Yellow, 3×11	do.	20	5	0		—	
Do. Pensacola prime pitch-pine, 3×9	do.	10	17	6		—	
Do. Lulea, 2nd Yell., 4×9	do.	11	0	0		—	
Do. do. 1st do. 3×9	do.	12	15	0		—	
Do. do. do. do. 2½×7	do.	10	0	0		—	
Do. Kem, 3rd Yell., 3×9	do.	13	5	0		—	
Do. Mesane, 2nd White, 3×9	do.	10	5	0		—	
Do. Gefle, 3rd Yell., 2½×7	do.	13	0	0		—	
Do. Petschora.—2nd Yell., 3×9	do.	14	0	0		—	
3rd do 3×12	do.	9	15	0		—	
Do. do. 3×11	do.	11	15	0		—	
Do. do. 3×9	do.	12	10	0		—	
4th do. 3×9	do.	10	10	0		—	
Do. Sandarne, 1st and 2nd White, 3×11	do.	12	15	0		—	
Do. do. 3rd Yellow, 3×9	do	16	5	0		—	
Do. do. Inferior, 5th Yell.. 3×9	do.	7	15	0		—	
Do. Nederkalix, 2nd Yell., 4×9	do.	10	15	0		—	
Do. Oserka, Yellow 4th, 3×9	do.	10	10	0	11	15	0
Do. do. do. 4×9	do.	9	15	0		—	
Do. do. Unsorted, 2¼×7	do.	9	15	0		—	
Do. Ranea, 1st & 2nd Yell. 3×9	do.	12	5	0		—	
Do. Quebec, 3rd Spruce, 3×9×11ft.	do.	9	15	0		—	
Do. do 1st Red Pine, 3×9	do.	12	5	0		—	
Do. do. do. 3×7	do.	8	15	0		—	
Do. Montreal, 4th Yellow Pine, 3×11×16ft.	do.	10	5	0		-	
Do. Montreal, Spruce, 2nd 3×9×12ft.	do.	10	5	0		—	
Battens, all kinds	do.	6	10	0	12	0	0
Flooring Boards 1in. prepared, 1st	per square	0	7	9	0	12	0
Do. 2nd	do.	0	8	3	0	9	6
Do. 3rd &c.	do.	0	6	9	0	9	9

Hard Woods.

Ash, Quebec	per load	3	12	6		—	
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	15	0	0	20	0	0
Cedar, Cuba	per ft. sup.	0	0	5¼		—	
Do. Honduras	do.	0	0	4 5/16		—	
Do. Tobasco	do.	0	0	4 13/32		—	
Elm, Quebec	per load	4	0	0	5	2	6
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0	0	5¾		—	
Do. African	do.	0	0	4 13/16	0	0	5½
Do. St. Domingo	do.	0	0	3¼	0	0	6
Do. Tobasco	do.	0	0	4 31/32		—	
Do. Cuba	do.	0	0	10 13/32		—	
Do. Lago	do.	0	0	3 15/16	0	0	4⅞
Oak, Dantzic and Memel	per load	3	5	0	3	15	0
Do. Quebec	do.	6	5	0		10	0
Teak, Rangoon, planks	do.	16	0	0	17	10	0

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, Builders' Journal, 9, *East Harding Street, E.C.*

Bath.—For alterations and additions to premises, Union Street, Bath, for Messrs. J. Colmer, Ltd. Mr. H. J. Willcox, architect :—

Hayward & Wooster	£3,497
Webb	3,445
Wibley	3,405
Chancellor	3,385
Erwood & Morris	3,368
Long & Sons	3,233

Blackburn.—For the several works required in the proposed reconstruction of the children's ward at the Blackburn and East Lancashire Infirmary. Messrs. Simpson & Duckworth, architects, Richmond Chambers, Blackburn :—

R. Shorrock, Union Street Sawmills, Darwen	£1,680	0	0
T. P. Wilson & Sons, Lower Darwen	1,593	0	0
W. Edmundson, Bolton Road Sawmills	1,590	0	0
Ginger & Cooper, Woodbine Road	1,581	14	0
J. Whittaker & Sons, Canterbury Street	1,579	0	0
J. Boland, 143, Whalley New Road	1,570	0	0
J. Fecitt & Sons, Weir Street	1,550	0	0
T. Higson & Sons, Mount Street	1.539	0	0
W. J. W. Cronshaw, Pump Street	1.538	4	0
J. Sharples, Shaw Street Timber Yard	1,522	5	0
W. Livesey,* Nova Scotia Sawmills	1,455	8	7

* Accepted. [Rest of Blackburn.]

Brentwood, Essex.—For the erection of a country house, Warrin Road, Shenfield. Mr. Henry R. Bird, architect, High Street, Brentwood :—

Dix & Rogers	£735
Burtwell & Jarvis*	715

* Recommended for acceptance.

Brighton.—For laying wood and sanitary block paving in Church Street, Jubilee Street, Market Street, Clarence Square and Grenville Place, Brighton, for the Town Council. Mr. Francis J. C. May, M.I.C.E., F.S.I., borough engineer, Town Hall, Brighton :—

Acme Wood Flooring Co., Ltd., London	£3,746	17	6
W. Griffiths & Co.,* Ltd., London	3,663	16	0

Note.—A tender was also received from E. Alcott for a portion of the work. * Accepted.

Chartham (near Canterbury).—For the erection of a new infants' school and offices and alterations to the Board school, for the Chartham School Board. Mr. G. Smith, architect, 34, Station Road, Canterbury :—

Myall & Upson, Clacton-on-Sea	£2,350	0	0
F. R. Biggleston, Dover Road, Canterbury	2,250	0	0
Gann & Co., Whitstable-on-Sea	2,199	0	0
G. Browning, New Road, Canterbury	2,130	0	0
G. H. Denne & Co., Queen Street Deal	2,125	0	0
T. Terry, Wincheap, Canterbury	2,120	8	6
L Dickins, North Holmes, Canterbury	2,103	5	9
H. J. Smith, Stone Street, Maidstone	2,099	0	0
Keeler, Dover	2,081	0	0
A. J. Brewster, St. Peter's Street, Canterbury	2,070	0	0
W. J. Adcock, Canterbury and Dover	1,992	0	0
E. Harlow,* Chartham	1,923	0	0

* Accepted.

Clacton-on-Sea.—For the construction of a sewer along the St. Osyth Road to outfall with manholes, &c., for the Council. Mr. A. R. Robinson, engineer :—

Iles, Southend	£3,170
J. Jackson, Forest Gate	3,169
Bradshaw & Co.. London	3,155
Coxhead, Leytonstone	3,097
Potter & Co., Chelmsford	3,005
Rayner, Croydon	2,950
Ambrose & Co., Grays	2,933
Fairclough,* Clacton	2,432

* Accepted.

Croydon.—For additions to offices, &c , at the electricity works, Factory Lane, for the Croydon Town Council :—

Townsend & Coles, Soho, W.	£2,072	19	2
W. H. Baldwin	2,069	13	4
T. Pearce, Thornton Heath	2,062	0	0
R. Jones & Son, Sutton, Surrey	2,040	0	0
S. Page & Son	2,019	0	0
E. J. Saunders	1,997	0	0
W. Gowman	1,846	0	0
C. Jackson	1,798	0	0
F. Athey, South Norwood	1,797	0	0
T. Vaughan & Sons, Caterham Valley	1,780	0	0
Foster Brothers,* Suffolk Road, South Norwood	1,622	15	0

* Accepted. [Rest of Croydon]

Croydon.—For the erection of stables, Pampisford Road, Croydon, for Mr. G. R. Grant. Mr. E. Douglas Hoyland, architect, 2, Walbrook, E.C. :—

W. Potter	£690
W. Hards	688
I. R. Bex	595
Umlandt & Nicoll	585

[All of Croydon.]

Didsbury (near Manchester).—For the erection of a private residence, for Mr. Leonard Letter. Messrs. Maxwell & Tuke, architects, 25, Brazennose Street, Manchester. Quantities by the architects :—

E. Roberts & Co.	£2,564
G. England	2,227
W. Thorpe	2,195
G. Macfarlane	2,172
Wilson & Toft	2,120
Neill & Sons	2,090
W. Shaw	2,083
H. Matthews	2,0[illegible]6
Burgess & Galt*	1,980

* Accepted.

Glossop, Derbyshire.—Accepted for foundations, St. Luke's Church. Messrs. Alfred Darbyshire, F.S.A., V.-P.R.I.B.A., and F. Bennett Smith, F.R.I.B.A., architects, 17, Brazennose Street, Manchester :—

Cyrus Garside & Sons, Ltd , Glossop	£690

Gillingham, Kent.—For the erection of sixty cottages, St. Mary's Road, Gillingham, Kent. Mr. Ernest J. Hammond, architect and surveyor, New Brompton, Kent :—

E. E. Skinner, Chatham	£12 750
H. E. Phillips, New Brompton	12,600
L. Seager, Sittingbourne	11,910
A. Candler, New Brompton	11,700
J. Wilford, Snodland	11,640
A. S. Ingleton, Herne Bay	11,400
W. C. Snow, New Brompton	11,040
West Brothers, Rochester	10,800
H. Harris,* New Brompton	10.740

* Accepted.

Hounslow.—For the erection of a masonic temple, Hounslow, for the Middlesex Masonic Temple Company, Ltd. Mr. C. Botterill, architect, 583, Fulham Road, Walham Green, S.W.

W. Nash	£1,602	0
M. D. Wills	1,549	15
Messon & Sons	1,532	0
T. Hiscock	1,488	0
Edwards & Medway	1,390	0
McArthur & Co.	1,372	0
J. W. Brooking,* Richmond	1,328	0

* Accepted.

Ilfracombe (Devon).—For the several works required in the construction of a new cast-iron sewage outfall at Chayne, about 310 lineal yards in length, and main trunk sewers leading thereto, for the Urban District Council. Mr. O. M. Prouse, engineer :—

Martin, Wells & Co., Aldershot	£52,626	0	0
F. W. Trimm, Eastleigh	45,199	0	0
Pethick Brothers, Plymouth	42,057	0	0
A. Kellett, London and Plymouth	22,730	13	3
R. H. Neal, Plymouth	21,208	0	0
E. Ellis & Son, Bideford	20,747	0	6
E R. Lester, Plymouth	20,020	0	0
Britton & Pickett, Ilfracombe	18,624	0	9
J. & T. Binns, Croydon	18,482	0	0
B. Cooke & Co ,* 16, Victoria Street, Westminster	17,300	0	0
G. Rutter, Barry	17.023	1	8
Barnes, Chaplin & Co., Cardiff	16,810	5	0

* Accepted.

Itchen.—For making up ten roads under the Private Street Works Act, 1892 (about 3 miles), for the Itchen Urban District Council. Mr. T. A. Collingwood, C.E., surveyor :—

J. Trueman, Swanley, Kent	£6,770
Streeters & Todhunter, Godalming	6,476
F. W. Pettit, Itchen	5,446
F. Osman, Southampton	5,285
Douglas & Richards,* Southampton	4,592

* Accepted. [Surveyor's estimate, £5,564.]

Itchen.—For making up Manor Road (part) and Avenue Road (part) public roads, for the Itchen Urban District Council. Mr. T. A. Collingwood, C.E., surveyor:—

Streeters & Todhunter	£530
J. Trueman	528
F. W. Pettit	496
F. Osman	462
Douglas & Richards*	354

* Accepted. [Surveyor's estimate, £480.]

Jarrow.—For emptying ashpits, box receptacles, and general cartage in the borough from 13th inst. Mr. J. Petree, borough surveyor :—

G. Watson, Monkton	£4,350
F. Dixon, Hebburn	3,900
J. Yates, Jarrow	3,750
O. Monkhouse, Durham	3,720
G. Owen, Jarrow	3 588
W. English,* Ferry Street, Jarrow	3,321
T. Prior, Sunderland	3,300

* Accepted.

London, N.—For alterations to the kitchen at their infirmary, Hoxton Street, N., for the Guardians of St Leonard, Shoreditch :—

B. E. Nightingale, Albert Embankment, S.E.	£2,850	0	0
G. Newton, Southwark Bridge Road	2,775	0	0
Dearing & Son, Halliford Street, N.	2,753	0	0
Minter, Westminster, S.W.	2,735	0	0
W. S. Beaton, Pimlico, S.W.	2,608	16	4
Schooley & Son, Appold Street, E.C.	2,587	10	0
J. Ivory,* Great Cambridge Street, N.E.	2,515	0	0
T. Pearce, Thornton Heath	2 410	0	0

* Accepted.

London, S.W.—For making road and laying down sewers on the Ransbury Estate, Clapham Road, S.W. Mr. W. Hunt, surveyor, Norfolk Street, Strand, W.C. :—

T. Swaker, Clapham	£1,185	0
Peill & Son, Bromley	1,156	0
Wimpey & Co., Hammersmith	1,149	7
J. Jackson, Forest Gate	1,139	0
S. Kavanagh & Co., Surbiton	1,123	0
H. Woodham & Son,* Catford	1,114	0

* Accepted.

London, W.—For alteration and enlargement of boiler and engine houses and the erection of a chimney shaft at their workhouse in the Marloes Road, for the Kensington Board of Guardians. Mr. Ernest Flint, architect, 80, Colman Street, E C. :—

W. Neil & Co., Bow	£2,300	0
Fraser & Sons, Millwall	2,281	0
Windsor & Co., Clapham Junction	2,236	15
C. Ansell, Lambeth, S.E.	2,167	0
C. Dearing & Son, London, N.	2,155	0
J. Jarvis & Son, London, N.	2,150	0
W. Webber, London, N.	2.130	0
W. J. Renshaw, Putney	2,065	0
Chambers Brothers, Ealing	2,052	0
T. Robinson, Regent's Park, N.W.	2,025	0
J. W. Gray & Co., London, E.	1,989	0
J. O. Richardson, Peckham	1,969	0
T. Pearce, Thornton Heath	1,066	0
W. Wallis & Co., Belham	1,899	0
Foster Brothers, Norwood Junction, S.E.	1,875	0
C. R. Price, 18, Chiswell Street. E.C.	1,857	0

Maidenhead.—Accepted for the completion of a riverside bungalow for Mr. Harold Mossop, on the Fishery Estate. Messrs. Palgrave & Co., architects, Westminster : –

C. H. Hunt & Sons, High Wycombe	£1,260

Maidenhead.—For the erection of a riverside villa on the Fishery Estate, for Mr. E. J. Read. Messrs. Palgrave & Co., architects, 28 Victoria Street, S.W. Quantities by the architects : –

W. J. Lovell, Marlow Bucks	£2,447
A. J. Hudson, Honor Oak Park	2,398
Butcher & Hendry, Windsor	2,185
C. H. Hunt & Sons, High Wycombe	2,090

Neath.—For the erection of a house, Gnoll Road Neath, for Mrs. Morris. Mr. Frank B. Smith, architect, Port Talbot :—

J. Creighton, Neath	£750	0
J. Lake, Port Talbot	642	8
J. Snow, Neath	615	18

* Accepted.

Neath.—For the erection of two houses at Gnoll Road Neath, for Mr. W. M. Jones. Mr. Frank B. Smith, C.E., architect, Port Talbot :—

W. Creighton, Neath	£1,500
J. Lake, Port Talbot	1,202
J. Snow,* Neath	1,160

* Accepted.

Pemberton (Lancs).—For the construction of the light railway, along Warrington Road, from Newtown through Goose Green to the Ashton boundary at Park Lane, for the Pemberton Urban District Council :—

J. Hurst, Wigan	£12,686	5	2
W. G. White, London, E.C.	9,823	14	6
A. Stark, Glasgow	9,668	6	8
Holme & King, Liverpool	9,343	3	2
A. Graham & Sons, Huddersfield	9,200	0	0
S. Johnson, Manchester	8,949	0	2
G. Freeman & Sons, Oldham	8,653	11	0
W. Winnard,* Wallgate, Wigan	8,602	14	1
W. Jones & Co., Manchester	8,009	13	1

* Accepted.

Pinxton.—For the erection of a mixed school in Slade Lane to accommodate 300 children, for the School Board :—

H. Goodall	£2.690	0
J. H. Clayton	2,679	15
F. Christian & Son*	2,6[illegible]0	0

* Accepted.

Portsmouth.—For supply and erection of centrifugal pumps, electrical motors, cast-iron tanks, pipes and sundry ironwork, for the Corporation :—

Vosper & Co , Ltd., Portsmouth	£1.950
H. & W. Davis & Sons, Portsmouth	1,635
Sir Hiram Maxim Electrical Engineering Co., Ltd.	1,595
Aiton & Co.*	1,559

* Accepted.

Portsmouth.—For the supply and erection of additional Lancashire boilers, steel chimney, fans and engines for induced draught, mechanical stokers, economiser, steam, feed and other pipes, chequer plating and sundry ironwork, for the Corporation :—

J. Carter & Sons	£8,829	0
D. Sewart & Co., Ltd.	8,561	0
J. Thompson	8,000	0
J. Fraser & Son	7,919	0
Tinkers, Ltd.	7,690	0
Davy Brothers	7,500	0
Hughes & Stirling	7,247	0
Yates & Thom	6,927	0
E. Danks & Co , Ltd.	6,227	10
Oldham Boiler Works Co., Ltd.	6,020	0
Hewett & Kellett,* Bradford	5,545	0

* Accepted.

Portsmouth.—For the erection of an engine-room, annexe, and a pumping station, with all necessary foundations, &c., for the Corporation :—

Smith & Son, London	£1,549
S. Salter	1,355
Coltherup	1,280
Clark & Son	1,267
W. T. Dugan	1,230
W. W. Learmouth	1,2[illegible]0
T. W. Quick*	1,120

* Accepted. [Rest of Portsmouth.]

Port Talbot.—For the erection of a block of offices at Port Talbot. Mr. Frank B. Smith, C.E , architect, Port Talbot :—

Lattey & Co., Cardiff	£1,380	0	0
J. Davies, Port Talbot	1,285	0	0
C. & F. Gain,* Port Talbot	1,261	14	7

* Accepted.

Winkfield (Berks).—For the erection of a cottage, for Mr. E. C. Rawlings. Mr. E. Douglas Hoyland, architect, 2, Walbrook, E.C. :—

J. H. Green, Binfield	£325
Edwin Pack, Sunningdale	297
J. T. Owen, Bracknell	267

Winkfield (Berks).—For the erection of a pair of cottages, for Mr. E. C. Rawlings. Mr. E. Douglas Hoyland, architect, 2, Walbrook, E.C. :—

J. T. Owen, Bracknell	£489
J. H. Green, Binfield	455
Edwin Peck, Sunningdale	449

Trade and Craft.

Anaglypta and Salamander.

"Anaglypta" and "Salamander" are already so well-known all over the country that, as materials, they need no further introduction; but we have always to note any new designs for them. Such designs are now before us in the new pattern book which has just been issued by the manufacturers—a large thick book containing several scores of designs, and very well produced. It is a regrettable fact that many manufacturers spend infinite pains on designs which have very little merit, but here in this book we see many admirable designs, the work of such men as Mr. George C. Haité, Dr. Dresser, Mr. Aumonier, Mr. T. R. Spence, Mr. C. F. A. Voysey and others. As a decorative material we consider "Anaglypta" admirable. Objection has been made by ultra-purists that it mimics plasterwork and is consequently not to be suffered; but one might just as well object to brass because it was much the same colour as gold. True, the material can be put to wrong use; we think, for instance, that it is a pity to make it appear to be wood panelling. The material has so much scope that to tie it down to the limits of other materials, such as wood, is to deprive it of its own merits, and to discredit it. We are glad, however, to see in this book that the designs respect the good qualities of the material, and that there is a freedom about them quite appropriate to "Anaglypta." The majority of the reproductions are from photographs, but often a line sketch is given suggesting a suitable scheme of decoration. There are, for example, photographic illustrations of a Louis XV. ceiling accompanied by a series of sketch plans and diagrams showing how ceilings of different sizes can be treated. These sketch plans are very useful. Suppose, for example, an architect put his plan on tracing paper at a scale of $\frac{3}{4}$in. to the foot; he can place this on the sketch plan of any desired design and see very easily how it will work out; moreover, it enables him to explain and satisfy his client on this point, and, finally, it can be handed over to the workman who is sent to fix the material, thus providing a safe guide and avoiding the risk of the work being clumsily done. The stopping of ceiling designs short of the cornice is often a necessity beyond that of giving the pattern a good finish; in many cases the cornice of a room is altogether too weak to carry a high relief ceiling, so that the addition of a margin and a moulding to edge a relief design gives width and strength to the cornice itself, and helps to bring it more into scale with the ceiling pattern. Many hints are given in this book about fixing "Anaglypta" and afterwards decorating it; and these admirably supplement the numerous designs. Architects and builders should secure a copy of the book, which should be indispensable to them. The works of the Wallpaper Manufacturers, Ltd. (Anaglypta Branch) are at Darwen, and the London warehouse at 92 and 93, Great Russell Street, W.C.

Sewerage Ironwork.

Mr. William E. Farrer, of 36, Cannon Street, Birmingham, has issued an admirable catalogue showing manhole covers and frames, gulleys, traps, ventilating shafts, valves, penstocks and other sewerage ironwork. Many of the illustrations are from photographs. The lamphole and manhole covers shown have wood blocks on the underside and are of square, rectangular, circular and oval form: a very neat airtight cover for inspection chambers, with grease joint and flange for letting into asphalt, &c, is illustrated on p. 9. Some improved galvanized *malleable* step irons are also shown, the iron being made with a web on the underside of the arms, exactly receiving a header brick, while the stretcher, when fixed on top, immediately binds it in position—there is no cutting of brickwork or wide joints. The valves illustrated include hand-flushing, disc, reservoir outlet, floating outlet (to draw off water or other liquid from near the surface without taking scum), sluice, sludge, and reflux and back-pressure valves: in addition to which are tide flaps and penstocks of several kinds, one quick-action penstock having toggle levers. Farrer's patent bead-rim effectually prevents the water from washing over the edges of lavatory basins of every pattern. It is an up-to-date improvement of the old anti-splash rim in which soapy scum and dirt used to settle. Another speciality is "Torfit," a specially-prepared composition for urinal backs, &c., which has the peculiar quality of rendering urine innocuous immediately on coming in contact with it; thus preventing noxious smells. Mr. Farrer has recently removed his works from Fawdry Street, Smethwick, to larger and more central premises in Cambridge Street, Birmingham.

Royal Academy Exhibition.

The receiving day for architectural works at this year's Royal Academy Exhibition is Friday, March 27th. We shall be pleased, as in previous years, to receive drawings from intending exhibitors, and undertake to deliver them at Burlington House free of charge; but they must reach us at latest by noon on the day mentioned. The earlier they are sent the better All drawings must have the necessary labels attached to them.

Bankruptcies.

[Abreviations: R O.—receiving order; P.E.—public examination; C.C—county court; O.R.—official receiver.]

J. ATKINSON, builder, Rodley, Leeds. R.O. March 13th.

J. O. BOWER, builder, Aberfan, Merthyr Tydfil. R.O. March 11th.

CHALLISS & CHALLISS, builders, Maidstone. P.E. March 11th. Deficiency £483.

J. BOOTH, builder, Burslem. Gross liabilities £1,058; £435 expected to rank for dividend; assets £346.

C. STOTTER, brick manufacturer, Enfield. R.O. March 10th.

G. A. DUFFIELD, builder, West Tarring. P.E. held March 12th. Liabilities £491: assets £170. Adjourned.

R. ROUGHTON, builder, Wisbech St. Peter, Cambs. R.O. March 11th.

H. HUDSPITH, builder Gateshead. R.O. March 9th. P.E. Newcastle County Court, March 26th, at 11.

J. E. BARRETT, Lees, near Oldham. First meeting O.R.'s, Oldham, March 31st at 11.30. P.E. April 17th at 11.

T. WARDEN, builder. 3, Beckingham Road, Leicester. P.E. The Castle, Leicester, April 3rd, at 10.

R. S. BUCKERIDGE, builder, 37, High Street, Manchester Square, London, W. First meeting, Bankruptcy Court, March 26th, at 12. P.E. April 29th at 11.30.

C. BUTLER, builder and contractor, 20, Bucklessbury, London, E.C., and Westcliffe-on-Sea. R.O. March 10th. P.E. Bankruptcy Court, April 29th, at 11.

W. TODD, joiner and builder, Ainsdale, Liverpool. Liabilities £620; assets £232. P.E. adjourned till April 9th.

E. J. LEESE, builder, Wrockwardine Wood, Salop. R.O. March 9th. First meeting, Madeley C.C, April 1st at 12 30.

W. THOMPSON, builder, 81, Bishopsgate Street Within, London, E.C. Meeting of creditors held March 17th Liabilities £2,000; assets £10.

W. PHILLIPS, builder, Castle Street, Abertillery. Meeting of creditors at Merthyr on March 16th. Gross liabilities £5,138; deficiency £2,343. Failure attributed to losses on contracts.

F. H. WHITE, builder and contractor St. Leonards. Adjourned examination held March 10th at Hastings. Debtor said he did not know how £1,500 was lost during the last ten years. Examination adjourned.

T. TAYLOR. builder, 23, King's Road, Bengeworth Evesham. First meeting of creditors at Worcester on March 14th. Liabilities £495; assets £113. Failure attributed to losses on contracts and keen competition. The assistant official receiver pointed out that as debtor commenced with a capital of £7 he was only that amount the worse off, while his creditors had to suffer a loss of £375.

E. C. TREW, builder, Boston Avenue, Southend. Discharge applied for at Chelmsford on March 11th. Liabilities £1,352; assets £221. It is expected that no dividend will be paid. Debtor was hopelessly insolvent from the time he started business. He kept his books in a very negligent way, and there was a deficiency of £3,365 not accounted for. The judge, in suspending the discharge for five years, said that people who supplied speculative builders with material without proper enquiry were more or less making themselves party to the speculations.

M'KISSOCK & GARDNER, contractors, 180, Hope Street, Glasgow. Liabilities £11,804; assets £5,823; showing an apparent dividend of 9s. 10d. per £1 subject to the expenses of realization. The present statement was made on the basis that the unfinished contracts would be taken up and finished by the trustee. The City Improvement Committee held a special meeting to consider the position of the contract between the Corporation and the debtors for the digger, mason and brick work of the buildings being erected in Nelson Street and Bell Street. The original amount of the contract was £14,881 7s. 8d., but extra work sanctioned by the committee, amounting to about £875, had to be added to the original contract price. The work executed by the contractors and paid for by the Corporation up to January 6th amounted to £12,150, leaving about £3,606 7s. 8d. of work still remaining to be executed under the contract. The retained fund under the contract amounted at January 6th to £1,450, but £500 of this sum was paid to the contractors on January 26th, leaving £850 still in the hands of the Corporation.

Guaranteed Gearing

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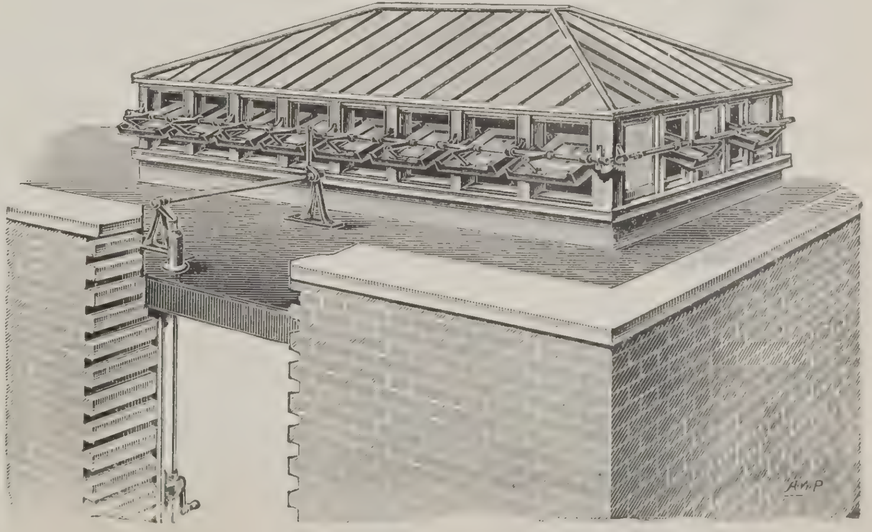
FIFTEEN GOLD MEDALS AWARDED

This Illustration shows the Gearing fixed outside .the Controlling Handle being within the Room.



Complete List of Contracts Open.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	BUILDING:		
March 26	Clones—Post Office	—	H. Williams, Secretary, Office of Public Works, Dublin.
„ 26	Brighouse—Chancel, &c.	—	C. H. Fowler, Architect, The College, Durham.
„ 26	Chester—Lavatories	Corporation	City Surveyor, Town Hall, Chester.
„ 26	Downpatrick—Alterations to Kitchen, &c.	Asylum Committee	Graeme-Watt & Tulloch, 77A Victoria Street, Belfast.
„ 26	Honley, near Huddersfield—Six Houses, &c.	—	J. Kirk & Sons, Architects, Huddersfield.
„ 26	Leicester—Pumping Station, &c.	Sewage Works and Farms Committee.	E. G. Mawbey, Borough Engineer, Town Hall, Leicester.
„ 26	Southowram, near Halifax—House	—	E. Taylor, 15 Church Street, Halifax.
„ 26	Beverley—Retort Bench, &c.	Gas Committee	F. W. Oldfield, Gas Manager, Gasworks, Beverley.
„ 26	Exeter—Alterations, &c.	Guardians	R. M. Challice, 14 Bedford Circus, Exeter.
„ 27	Shelf, Yorks—House and Stabling	—	J. F. Walsh & G. Nicholas, Architects, Museum Chbrs., Halifax.
„ 27	Bridport—Pair of Semi-detached Villas	J. Guppy	F. Cooper, 77 East Street, Bridport.
„ 28	Birkenhead—Rebuilding Tower of Town Hall	Corporation	H. Hartley, 8 Harrington Street, Liverpool.
„ 28	Elland, Yorks—Villas	—	C. F. L. Horsfall & Son, Architects, Lord Street Chbs., Halifax.
„ 28	Halifax—Extensions to Wire Works	—	L. Coates, Architect, Yorkshire Bank Chbrs., Waterhouse Street, Halifax.
„ 28	Petworth, Sussex—Residence and Stabling	—	W. Buck, Horsham.
„ 28	Whitley, Northumberland—Wall, &c.	Urban District Council	J. P. Spencer, 30 Howard Street, North Shields.
„ 28	Corsham, Wilts—Wesleyan Church	—	W. H. Bromley, Building Surveyor, Corsham.
„ 28	Barrow-in-Furness—Outbuildings	School Board	W. Hutchinson, Clerk, School Board Offices, Barrow-in-Furness.
„ 30	Bristol—School Enlargement	School Board	W. V. Gough, 24 Bridge Street, Bristol.
„ 30	Bristol—School	School Board	H. J. Jones & Son, Architects, Bridge Street, Bristol.
„ 30	Canterbury—Screens	Guildhall Committee	A. C. Turley, City Surveyor, Guildhall Street, Canterbury.
„ 30	Glasgow—Roofing	Caledonian Railway Co	Company's Engineer, Buchanan Street Station, Glasgow.
„ 30	Halifax—Addition to School	School Board	W. C. Willlams, 29 Southgate, Halifax.
„ 30	Merthyr—Rebuilding	B. H. Morris	J. Morgan, 53 Thomas Street, Merthyr.
„ 30	Nelson, Lancs—School Chapel	—	H. Whittaker, 21 Market Square, Nelson.
„ 30	Workington—Church Restoration	Executive Committee	J. Howes, 106 Harrington Road, Workington.
„ 30	Pontypridd—Retaining Walls	Urban District Council	P. R. A. Willoughby, Engineer, Council Offices, Pontypridd.
„ 30	Stokesley—Methodist Church	—	F. Watson, South View, Stokesby.
„ 30	Cowes—Coal Stores and Stables	Co-operative Society, Ltd.	J. W. Bessant, Architect, Pelham Road, Cowes.
„ 31	Smethwick—Bricks, &c.	Corporation	C. J. F. Allin, Borough Surveyor, Town Hall, Smethwick.
„ 31	Alnwick—Malthouse	J. P. Simpson & Co.	Brewill & Baily, 44 Parliament Street, Nottingham.
„ 31	Cleckheaton—Wire Works, &c.	—	R. Castle & Son, Architects, London City and Midland Bank Chambers, Cleckheaton
„ 31	Hebburn—Shelter	Urban District Council	Surveyor, Hebburn.
„ 31	Liverpool—Sorting Office	Commnrs. of H.M. Works, &c.	H.M. Office of Works, General Post Office, Liverpool.
„ 81	Portsmouth—Workshops, &c.	Corporation	E. Rotter, Pearl Buildings, Commercial Road, Portsmouth.
„ 31	Richmond, Surrey—Mortuary, &c.	Town Council	J. H. Brierley, Borough Surveyor, Town Hall, Richmond.
„ 31	Sheffield—Wall	United Gaslight Co.	J. W. Morrison, Company's Engineer, Commercial Street, Sheffield.
„ 31	Todmorden—Retorts, Firebricks, &c.	Gas Committee	H. Hawkins, Engineer, Town Hall, Todmorden
April 1	Clayton, Yorks—Nurses' Home	North Brierley Union Gdns.	S. Spencer, Architect, Old Bank Chambers, Great Horton.
„ 1	Winwick, Warrington—Nine Octagonal Shelters	County Asylum Committee	H. Ellis, Clerk, County Asylum, Winwick.
„ 1	London, N.—Postal Stores Building	Commnrs. of H.M. Works, &c.	J. Wager, H.M. Office of Works, Storey's Gate, S.W.
„ 2	London, S.E.—Underground Convenience	Lambeth Borough Council	H. Edwards, Borough Engineer, Lambeth Town Hall, Kennington Green, S.E.
„ 2	London, S.E.—Alterations, &c.	Southwark Union Guardians	G. D. Stevenson, 13 and 14 King Street, Cheapside, E.C.
„ 3	Barking, Essex—Bridge, &c.	County Council	P. J. Sheldon, Chief Surveyor, County Offices, Chelmsford.
„ 3	Cross Houses, near Shrewsbury—Nurses Home, Fire-escape, Staircases.	Atcham Union Guardians	A. B. Deakin, Architect, Pride Hill, Shrewsbury.
„ 3	Ilford and East Ham—Bridge	Essex County Council	P. J. Sheldon, Chief Surveyor, County Offices, Chelmsford.
„ 3	Morpeth—Police Station	Standing Joint Committee	J. A. Bean, County Surveyor, The Moothall, Newcastle-upon-Tyne.
„ 4	Musselburgh, near Edinburgh—Church	Rev. P. M'Gettigan	A. E. Purdie, Architect, Meadow Grange, Bleasa, near Canterbury.
„ 5	Swansea—Two Playsheds	Rhyndwychydach School Bd.	C. S. Thomas, 63 Wind Street, Swansea.
„ 6	Guildford—Flood Gates, &c.	Town Council	C. G. Mason, Borough Surveyor, Tuns Gate, Guildford.
„ 6	Cowes—Buildings at Waterworks Pumping Station	Urban District Council	J. W. Webster, Engineer, High Street, Cowes.
„ 6	Lelant—Three Houses	J. P. Uren	H. Maddern, 27 Clarence Street, Penzance.
„ 6	Ynyshir—School Buildings	Ystradyfodwg School Board	J. Rees, Architect, Hillside Cottage, Pentre.
„ 7	Halifax—Additions to Confectionery Works	J. Mackintosh & Co., Ltd.	M. Hall, 1 Harrison Road, Halifax
„ 7	Lydd—Repairs of Church Roof and Tower	—	Rev. A. Hardy, Lydd
„ 7	Belfast—Home for Boys	Sisters of Nazareth	J. J. M'Donnell, 27 Chichester Street, Belfast.
„ 9	Slough—School Buildings	School Board	Lee & Farr, Architects, Slough
„ 18	Macclesfield—Annexe Superstructure	—	H. Bewick, County Architect, Newgate Street, Chester.
„ 14	Netherne, Surrey—Foundation Works	County Council	G. T. Hine & Co., 35 Parliament Street, Westminster.
	ENGINEERING		
March 26	Cardiff—Piping	Tramways Committee	A. Ellis, Borough Electrical Engineer, Central Offices, The Hayes, Cardiff.
„ 26	Newark—Reservoir	Corporation	H. Rofe & Son, 8 Victoria Street, Westminster.
„ 27	Cheddington—Waterworks	Wing Rural District Council	J. Newton, Leighton Buzzard, Beds.
„ 27	St. Anne's-on-Sea—Iron Sand Shield	Urban District Council	T. Bradley, Clerk, South Drive, St. Anne's-on-Sea.
„ 27	Sunderland—Electric Cables, &c.	Corporation	J. F. C. Snell, Borough Electrical Engineer, Town Hall, Sunderland.
„ 27	Sunderland—Fuel Economiser	Corporation	J. F. C. Snell, Borough Electrical Engineer, Town Hall, Sunderland.
„ 27	Sunderland—Two Boilers	Corporation	J. F. C. Snell, Borough Electrical Engineer, Town Hall, Sunderland.
„ 28	Wednesbury—Motor-Generators, &c.	Mayor, Aldermen and Burgesses	F. J. Warden-Stevens, 34 Victoria Street, Westminster.
„ 28	Welwyn, Herts—Sinking Well	Rural District Council	R. E. Middleton, 17 Victoria Street, S.W.
„ 30	Bury, Lancs—Boilers, &c.	Electricity Committee	S. J. Watson, Engineer, Electricity Works, Bury.
„ 30	Cardiff—Two Steel Swingbridges	Cardiff Railway Co.	G. N. Abernethy, 4 Delahay Street, Westminster.
„ 30	Glasgow—Boring, &c.	Clyde Navigation Trustees	W. M. Alston, 16 Robertson Street, Glasgow.
„ 30	New Shoreham, Sussex—Main Laying	Steyning West R.D.C.	F. Slaughter, Engineer, West Street, New Shoreham.
„ 30	Wolverhampton—Tramways	Tramways Committee	Borough Engineer, Town Hall, Wolverhampton.
„ 30	Hurlford, Kilmarnock—Sewerage Works	District Committee	J. Sturrock, jun., 63 King Street, Kilmarnock.
„ 30	London, S.W.—Electric Mains	Fulham Borough Council	F. H. Medhurst, 13 Victoria Street, S.W.
„ 30	Sheffield—Electricity Works	Corporation	Corporation Electric Supply Department, Commercial Street, Sheffield.
„ 31	Deal—Gasholder Tank	Gas Committee	Manager, Gasworks, Deal.
„ 31	London, E.C.—Oil-Tank Wagons	Bengal-Nagpur Rlwy. Co., Ltd.	Offices, 132 Gresham House, Old Broad Street, E.C.
„ 31	London, N.E.—Boring Artesian Well	Shoreditch Borough Council	H. M. Robinson, Town Clerk, Shoreditch Town Hall, Old St., E.C.
„ 31	Wyke Regis, Dorset—Sewerage Works	Weymouth R.D.C.	Lemon & Blizard, Engineers, Castle Lane, Southampton.
„ 31	Bridgend, Glamorgan—Electrical Apparatus	Urban District Council	T. J. Hughes, Clerk, Council Offices, Bridgend.
„ 31	London, S.W.—Travelling Cranes	London County Council	County Hall, Spring Gardens, S.W.
April 1	London, S.E.—Escape Staircases	St. Giles' (Camberwell) Guardians	A. E. Mullins, 48 Peckham Road, Camberwell, S.E.
„ 3	Leek—Electric Lighting Plant	Urban District Council	Burstall & Monkhouse, 14 Old Queen Street, Westminster, S.W.
„ 6	Aberayron, Wales—Railway Extension	Vale of Rheidol Light Rlwy. Co.	Sir J. & W. Szlumper, 17 Victoria Street, Westminster.
„ 8	Lowestoft—Tramways Plant	Corporation	W. C. C. Hawtayne, 9 Queen Street Place, E.C.
„ 8	Oswestry—Removing Weeds, &c.	—	M. B. Lawford, Clerk, Upper Brook Street, Oswestry.
„ 9	Colwyn Bay—Foreshore Improvements	Urban District Council	W. Jones, Engineer, Council Offices, Colwyn Bay, North Wales.
„ 9	Spezia, Naples, Venice and Taranto—Electrical Cables and Wire.	Italian Navy	Directorate-General of Royal Arsenals at Spezia.
„ 11	Bollington, near Macclesfield—Reservoir	Urban District Council	W. H. Radford, Engineer, Albion Chambers, King St., Nottingham.
	IRON AND STEEL:		
March 26	Pentre, Glamorgan—Ironmongery, &c.	Rhondda Urban District Council	O. Thomas, Engineer, Gas and Water Offices, Pentre.
„ 28	Waterloo, Lancs—Stores, &c.	Urban District Council	F. S. Yates, Surveyor, Town Hall, Waterloo.
„ 28	Willenhall, Staffs—Stores	Urban District Council	T. E. Fellows, Surveyor, Town Hall, Willenhall.
„ 28	Leicester—Joists and Columns	—	A. Colston, Engineer, Millstone Lane, Leicester.
„ 30	Manchester—Railway Stores	Lancs and Yorks Railway Co.	Stores Department, Osborn Street, Manchester.
„ 30	New Shoreham—Cast-iron Pipes	Steyning West R.D.C.	F. Slaughter, Engineer, West Street, New Shoreham.
„ 30	Aberdeen—Permanent-Way Materials	Harbour Commissioners	R. G. Nicol, Engineer, Harbour Engineer's Office, Aberdeen.
„ 31	Smethwick—Stores	Corporation	C. J. F. Allin, Borough Surveyor, Town Hall, Smethwick.
„ 31	London, E.C.—Steel Axles, &c.	Southern Mahratta Rly. Co., Ltd.	E. Z. Thornton, 46 Queen Anne's Gate, Westminster.
„ 31	Christiania—Wire, &c.	—	Line Manager, State Railways, Christiania.
„ 31	Hamilton, Scotland—Tools, &c.	—	J. Watson, Road Surveyor, Strathaven.
„ 31	London, W.—Iron and Steel Work	Great Western Railway Co.	Engineer, Paddington Station, W.

Complete List of Contracts Open —*continued.*

IRON AND STEEL—*cont.*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
March 31	Todmorden—Tools and Fittings &c.	Gas Committee	H. Hawkins. Engineer, Town Hall, Todmorden.
31	Pontypridd—Castings, &c.	Urban District Council	P. R. A. Willoughby, Surveyor, Council Offices, Pontypridd.
April 4	London, S.E.—Railway Stores	S.E. and Chatham Railways Co.'s	Superintendent of Stores, 84 Tooley Street, S.E.
,, 7	Spezia, Naples, Venice and Taranto—Brass Bolts	Italian Navy	Directorate-General of Royal Arsenal, Spezia.
June 15	Bangkok, Siam—Permanent-way Materials	Royal Siamese State Railways	Director-General, Gehots, Bangkok.
,, 15	Bangkok, Siam—Railway Stores	Royal Siamese State Railways	Siamese Legation, London.

PAINTING AND PLUMBING:

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
March 26	Pentre, Glamorgan—Oil and Paint	Rhondda Urban District Council	O. Thomas, Gas and Water Offices, Pentre, R.S.O., Glamorgan.
,, 30	Canterbury -Painting, &c	Guardians	J. Plummer 38 St. Margaret's Street, Canterbury.
,, 27	Bude, Cornwall—Plumbing	——	R. A. Foster-Melliar, Clerk, Council Offices, Bude.
,, 27	West Burton, Yorks—Painting and Decorating Church	——	W. A. Lawson, Post Office, West Burton.
,, 28	Salisbury—Painting	Municipal Charities	M. Harding, 58 High Street, Salisbury.
,, 28	Lincoln—Painting, &c.	——	W. Watkins, Surveyor, Silver Street, Lincoln.
,, 30	Warrington—Painting, Decorating, &c.	Parr Hall Committee	Borough Surveyor, Town Hall, Warrington.
,, 31	Hornchurch—Painting, &c., at Schools	School Board	W. Smith, 24 North Street, Romford.
April 2	Bournemouth—Painting in Parks, &c.	Town Council	F. W. Lacey, Borough Surveyor, Municipal Offices, Bournemouth.
,, 2	Fermanagh, Ireland—Painting	——	C. Wilson, Registrar, Infirmary, Fermanagh.
,, 4	Stanwix, Carlisle—Painting at Chapel	Burial Board	Curator, Cemetery, Stanwix, Carlisle.

ROADS AND CARTAGE:

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
March 26	Ashton-under-Lyne—Materials	——	Borough Surveyor, Town Hall, Ashton-under Lyne.
,, 26	Eastry Kent—Road Materials	Rural District Council	J. W. Watson, District Surveyor, Brook Street, Eastry, Dover.
,, 26	Lanchester—Materials	Rural District Council	W. Cumming, Highway Surveyor, 1 Office, Lanchester.
,, 26	Repton, Burton-on-Trent—Materials	Rural District Council	C. F. Chamberlin, Clerk, Union Offices, Burton-on-Trent.
,, 26	Uxbridge—Materials	Rural District Council	E. Birks, District Surveyor, Town Hall, Uxbridge.
,, 26	Moss Side Lancs—Materials	Urban District Council	H. B. Longley Engineer, Council Offices, Moss Side, Manchester.
,, 26	Cheshunt—Kerbing, &c.	Urban District Council	R. H. Jeffes, Surveyor, Manor House, Cheshunt.
,, 26	London, N.E.—Wood Paving	Hackney Borough Council	N Scorgie, Borough Surveyor, Town Hall, Hackney, N.E.
,, 27	Ramsey, Hunts—Granite	Urban District Council	F. E. Sarjeant, Clerk, Ramsey.
,, 27	St. Anne's-on-Sea—Materials	Urban District Council	Surveyor, Council Offices, South Drive, St. Anne's-on-Sea.
,, 27	Nottingham—Granite Randoms	Works and Ways Committee	A. Brown, City Engineer, Nottingham.
,, 27	Chipping Sodbury—Enclosing, Draining &c., Commons &c.	——	G. Ferris, 82 Queen Street, Cheapside E.C.
,, 28	Gateshead—Materials	Corporation	J. Bower, Borough Engineer, Town Hall, Gateshead,
,, 28	Romsey, Hants—Materials	Rural District Counci	J. White, District Surveyor, Cambria House, Winchester Road, Romsey.
,, 28	Waterloo, Lancs—Materials	Urban District Council	F. S. Yates, Surveyor, Town Hall, Waterloo.
,, 28	Willenhall, Staffs—Materials	Urban District Council	T E. Fellows, Surveyor, Town Hall, Willenhall.
,, 30	Shoreham, Sussex—Materials	Urban District Council	F. Slaughter, Town Surveyor, West Street, Shoreham.
,, 30	Hastings—Water-Carts	Corporation	P. H. Palmer, Borough Engineer, Town Hall, Hastings.
,, 30	Barton Regis near Bristol—Materials	Rural District Council	J. A. Henderson, Highway Surveyor, Southmead.
,, 30	Bridge near Canterbury—Road Material &c.	Rural District Council	S. Sladden, District Surveyor, Littlebourne, Dover.
,, 30	Govan Scotland—Paving	Town Council	F. G. Holmes, Burgh Surveyor, Town Hall, Govan.
30	Heywood—Road Materials, &c.	Corporation	J. A. Settle, Borough Engineer, Municipal Buildings, Heywood.
,, 31	Mumbles, Swansea—Materials &c.	Oystermouth U.D.C.	M. Hoskins, Surveyor, Mumbles.
,, 3	Hebburn—Street Making	Urban District Council	Mr. Currey, Surveyor, Hebburn.
,, 31	Leicester—Roads	Westcotes Estate Ltd.	Everard & Pick, 6 Millstone Lane, Leicester.
,, 31	Mountain Ash, Wales—Improving Road	Urban District Council	Surveyor, Town Hall Mountain Ash
,, 31	Rugby—Roadway	Urban District Council	D. G. MacDonald, Surveyor, High Street, Rugby.
,, 31	Rushden Northants—Granite and Slag	[redacted]	[redacted] B. Madin, Surveyor, Vestry Hall, Rushden.
,, 31	Ynysbwl Wales—Road Widening	[redacted]	[redacted]yor, Town Hall, Mountain Ash.
,, 31	Cannock, Staffs—Broken Granite, &c.	[redacted]	[redacted]Whitehead, Surveyor's Office, Penkridge, Stafford.
,, 31	Pontypridd—Materials	[redacted]	[redacted]Willoughby Surveyor, Council Offices, Pontypridd
,, 31	Smethwick—Street Works	[redacted]	[redacted]llin, Borough Surveyor, Town Hall, Smethwick.
,, 31	Smethwick—Materials	[redacted]	[redacted]llin, Borough Surveyor, Town Hall, Smethwick.
,, 31	Dartford—Kerbing, &c.	[redacted]	[redacted]on, 8 Hythe Street, Dartford.
April 1	East Molesey—Works and Materials	[redacted]	[redacted], District Council Office, East Molesey.
,, 1	Hove, Sussex—Paving, &c	[redacted]	[redacted]ott, Borough Surveyor, Town Hall, Hove.
,, 1	Littlehampton—Paving Works	[redacted]	[redacted]rd, Surveyor, Town Offices, Littlehampton.
,, 1	Luton—Road Material	[redacted]	[redacted] Surveyor, Town Hall, Luton.
,, 2	Great Harwood Lancs—Materials, &c.	[redacted]	[redacted], Town Hall, Great Harwood.
,, 2	Halifax—Street Formation	[redacted]	[redacted]lliams, 29 Southgate, Halifax.
,, 3	Cowbridge, Glamorgan—Road	[redacted]	[redacted]rris, Surveyor, Llanblethian, Cowbridge.
,, 4	Maldon, Essex—Works and Materials	[redacted]	[redacted]ywood and E. J. Ennals, 6 Market Hill, Maldon, Essex.
,, 4	Chingford, Essex—Making-up, &c.	[redacted]	[redacted] 14 The Parade, Chingford.
,, 6	Jarrow—Road Works	[redacted]	[redacted] Borough Surveyor, Acca House, Jarrow
,, 7	London, N.—Road Works	[redacted]	[redacted]grove, 99 Southwood Lane, Highgate, N.

SANITARY:

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
March 26	Bexley, Kent—Sewers, &c.	[redacted]	[redacted]nax, 11 Fold Street, Bolton.
,, 26	Camelford, Cornwall—Sewerage Works	[redacted]	[redacted]kin & Son, Engineers, Liskeard.
,, 26	Moss Side, Lancs—Sewage Precipitants, &c.	[redacted]	[redacted]ngley, Surveyor, Council Offices, Moss Side Manchester.
,, 27	St. Anne's-on-Sea—Sewer Pipes, &c.	[redacted]	[redacted] Council Offices, South Drive, St. Anne's-on-Sea.
,, 28	Dewsbury—Disinfectants	[redacted]	[redacted]Town Clerk, Town Hall, Dewsbury.
,, 28	Waterloo, Lancs—Pipes, Disinfectants, &c.	[redacted]	[redacted]s, Surveyor, Town Hall, Waterloo.
,, 28	Willenhall, Staffs—Disinfectants, Pipes, &c.	[redacted]	[redacted]ows, Surveyor, Town Hall, Willenhall.
,, 30	Sevenoaks—Sewers, &c.	[redacted]	[redacted]n, Surveyor, Council's Offices, Sevenoaks.
,, 31	Hamilton, Scotland—Drain Pipes	[redacted]	[redacted], Road Surveyor, Strathaven.
,, 31	Wyke Regis, Dorset—Sewerage Works	[redacted]	[redacted] Blizard, Engineers, Castle Lane, Southampton.
,, 31	Cannock, Staffs—Disinfectants, Drain Pipes, &c.	[redacted]	H. M. [redacted]hitehead, Surveyor's Office, Penkridge, Stafford.
,, 31	Pontypridd—Pipes Scavenging, &c.	Urban District Council	P. R. A Willoughby, Surveyor, Council Offices, Pontypridd.
April 1	East Molesey—Sanitary Stoneware Pipes, Aluminoferric, &c.	Urban District Council	Surveyor, District Council Office, East Molesey.
,, 6	Newburn-upon-Tyne—Sewerage Works	Urban District Council	T. Gregory, Engineer, Council Offices, Newburn.
,, 8	Rotherham Removal of Refuse	Corporation	H. H. Copnall, Town Clerk, Town Hall, Rotherham.
,, 14	Maesteg, Wales—Sewerage Works	Urban District Council	J. Humphreys, Engineer, Town Hall Chambers, Maesteg, Glam.

TIMBER:

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
March 30	Shoreham, Sussex—Timber	Urban District Council	F. Slaughter, Town Surveyor, West Street, Shoreham.
April 2	London, S.E.—Timber	Lambeth Borough Council	H. Edwards, Borough Engnr., Town Hall, Kennington Green. S.E

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &C.	BY WHOM ADVERTISED.
March 31	Hull—Extension of Town Hall	£300, £200, £100.	£5.	E. Laverack, Town Clerk, Town Hall, Hull.
,, 31	Castleford, Yorkshire—Public Library	£15, £10.	——	H. A. Broadbent, Clerk to Urban District Council, Castleford, Yorkshire.
,, 31	Chelmsford—Infectious Diseases Hospital	£25, £10.	£1.	A. S. Duffield, 96 High Street, Chelmsford.
April 4	Wycombe—Town Hall and Municipal Buildings	£110, £26 5s.	——	T. J. Rushbrooke, 77 Easton Street, Wycombe.
,, 10	Yeovil—Laying-out Land for Town Hall, Municipal Buildings, Markets, &c.	£21, £10 10s.	——	Borough Surveyor, Yeovil.
,, 14	Blackpool—Technical Schools	£60, £25, £15.	£1 1s.	J. S. Brodie, Borough Surveyor, Town Hall, Blackpool.
,, 30	Fenton, Staffs—Library	£60, £30.	£1 1s.	S. A. Goodall, Surveyor, Town Hall, Fenton, Staffs.
,, 30	Sunderland—Alterations to Hall	£100, £50, £25.	£[illegible].	J. W. Moncur, Borough Engineer, Town Hall, Sunderland.
No date	Tasmania—National Memorial to Soldiers killed in S. Africa.	——	——	Agent-General for Tasmania, 5 Victoria Street, S.W.
,,	Caerphilly - Church	——	——	Rev. E. Bush, St. Martin's Road, Caerphilly.
,,	Glasgow - Branch Library	——	——	J. D. Marwick, Town Clerk, City Chambers, Glasgow.

Coming Events.

Wednesday, March 25.

Society of Arts.—Mr Arthur Kitson on "Oil Lighting by Incandescence," 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—Quarterly meeting of the Directors at 8 p.m.

Dover Institute.—Mr. E. H. Montauban on 'Lighthouses," 8 p.m.

Chemical Society.—Annual meeting at 4.30 p.m.

Edinburgh Architectural Association. Mr. A. Hunter Crawford on "The Building of a House"—IV., 8 p.m.

Northern Architectural Association.—Lecture by Mr. R. P. S. Twizell, A.R.I.B.A., at 7.3, p m.

Thursday, March 26.

Society for the Encouragement of the Fine Arts.—Sir Wyke Bayliss, P.R.B.A., on "The Bogey in the Studio."

Leeds and Yorkshire Architectural Society.—Mr. Robert P. Oglesby on "Sir John Vanbrugh, Dramatist and Architect." Election of Officers, 6.30 p.m.

Institution of Electrical Engineers.—Mr. A. D. Constable and Mr. E. Fawsett on "Distribution Losses in Electric Supply Systems." Mr. M B. Field on "A Study of the Phenomenon of Resonance in Electric Circuits by the Aid of Oscillograms," 8 p.m.

Society of Antiquaries of London.—Meeting at 8.30 p.m.

Friday, March 27.

Institute of Sanitary Engineers.—Examination in Practical Sanitary Science (1st Day).

Incorporated Association of Municipal and County Engineers, Westminster Palace Hotel.—Discussion on "Wooden Structures and the Powers of Metropolitan Borough Councils with respect thereto," opened by Mr. J. Patten Barber, 7.30 p.m

Institution of Civil Engineers (Students' Meeting).—Mr. J. G. D. Y. Morgan on "The Advantages of Motor-driven Printing Machines," 8 p m.

Saturday, March 28.

Institute of Sanitary Engineers.—Examination in Practical Science (concluded).

Builders' Foremen's Association.—Mr. A Adams on "The Manufacture of Fletton Bricks," 8 15 p.m.

Edinburgh Architectural Association.—Visit to Darn Hall.

Monday, March. 30.

Royal Institute of British Architects.—Mr. Horatio Porter on "Fire Prevention," together with a report by the Science Committee on the Fire Offices Regulation.

Tuesday, March 31.

Architectural Association of Ireland.—Meeting at 7.45 p.m.

Institution of Civil Engineers.—Discussion on Mr. Amyas Morse's paper on "The Protection Works of the Kaiser-I-Hind Bridge over the River Sutlej, near Ferozepur," 8 p.m.

Wednesday April 1.

Architectural Association (Discussion Section).—Mr. A. M. Watson on "Some Unorthodox Views about Building," 7.30 p.m.

Edinburgh Architectural Association.—Mr. Frank Caws, F.R.I.B.A., on "A Plain Talk on Fireproof Floors and Construction," 8 p.m.

Thursday, April 2.

Society of Antiquaries of London.—Meeting at 8.30 p m.

Chemical Society.—Meeting at 8 p.m.

Friday, April 3.

Glasgow and West of Scotland Technical College Architectural Craftsmen's Society.—Business meeting at 8 p.m.

Institution of Junior Engineers —Mr. William Paterson on "Greasy Condensation Water as Boiler Feed," 8 p.m.

Architectural Association.—Mr. Banister F Fletcher on "Palladio," 7.30 p.m.

Saturday, April 4.

British Institute of Certified Carpenters.—Meeting at Carpenters' Hall at 6 p.m.

Glasgow and West of Scotland Technical College Scientific Society.—Annual general meeting at 7 30 p m.

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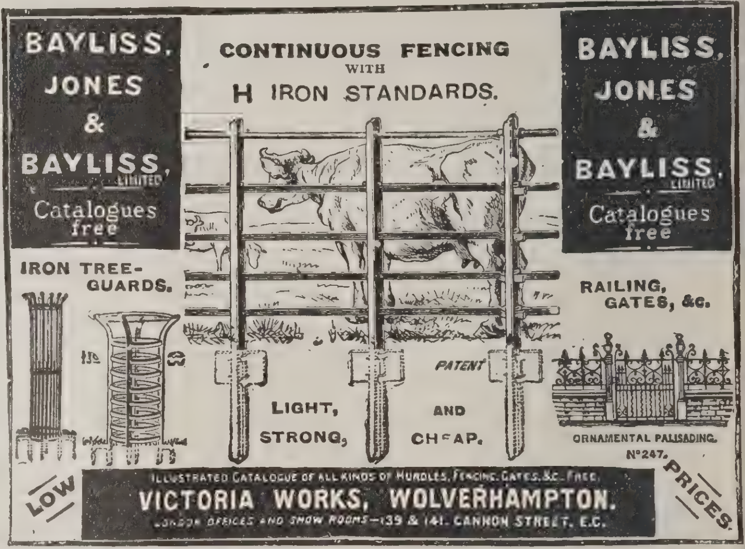
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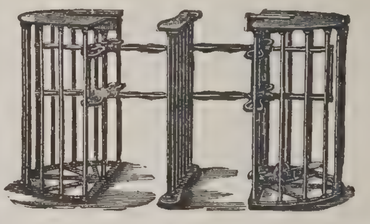

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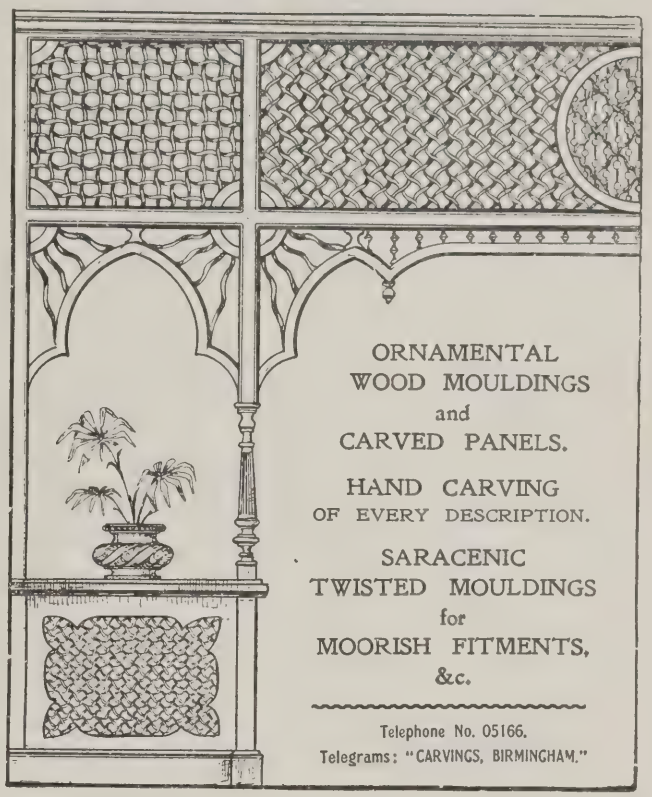

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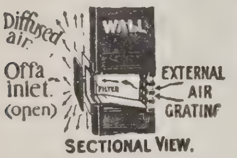

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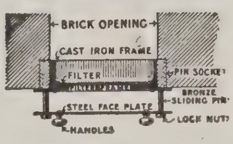

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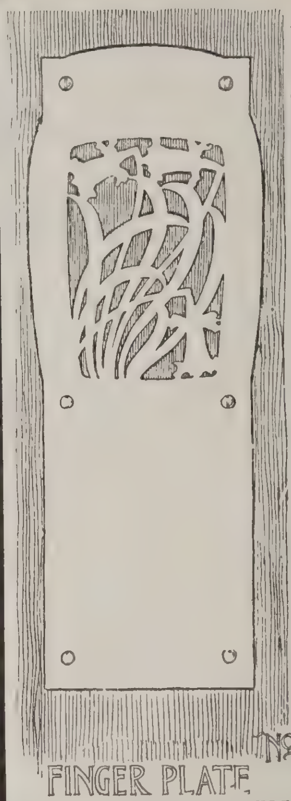

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THE

BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

April 1, 1903. Vol. 17, No. 425.

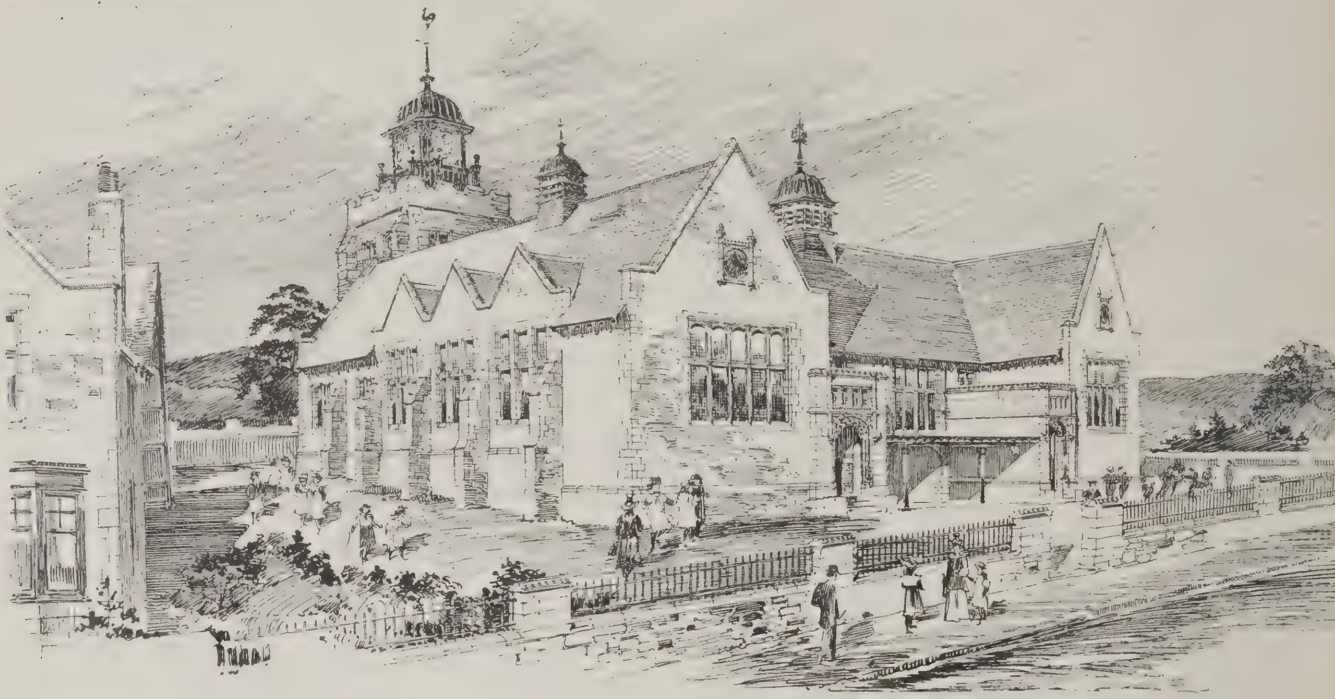
9, East Harding Street, E.C.

An American Professor. THE announcement will be read with considerable interest that an American professor has been chosen for the newly-constituted Chair of Architecture at Owens College, Manchester—chosen by the joint committee representing the Manchester City Council, Owens College and the Manchester Society of Architects. Professor Stewart H. Capper, M.A., is recommended. He has held a professorship of architecture in the McGill University of Montreal since 1896. He graduated in first-class classical honours in 1880 in Edinburgh, having previously attended classes at the University of Heidelberg, and also secured the Pitt Club scholarship in classics. From 1879 to 1884 he acted as private tutor and private secretary in the household of Sir Robert Morier, British Minister at Lisbon, and subsequently at Madrid. From 1884 to 1887 he studied with M. J. L. Pascal, architect member of the Institute of France, and was admitted by examination a student of the École des Beaux-Arts. Returning to Scotland in 1887, he entered upon the work of practical architecture, and from 1891 to the time when he was appointed to the Architectural Chair of Montreal practised his profession in Edinburgh. The new professor is also an Associate of the Royal Institute of British Architects, and has lectured and examined for the Edinburgh University in archæology and art for the M.A. degree. It is expected that Professor Capper will return to England and begin the duties connected with the Manchester Chair of Architecture next autumn.

Next to Shakespeare's Birthplace. WE heartily support the protest which is being raised against the proposed erection of a free library within twenty-five yards of Shakespeare's birthplace at Stratford-on-Avon. If the town wants a free library, by all means let one be erected—it was very generous of Mr. Carnegie to offer the money—but there is no reason why it should be put up in Henley Street: there are other sites available in the town where the library could be placed with equal convenience and without disturbing the serenity of a Mecca. As Mr. Sidney Colvin says, there is plenty of room for it in connection with the Memorial Theatre. Mr. Carnegie, it appears, bought the three cottages standing between the birthplace and a piece of ground partly vacant and partly occupied by a shop belonging to the town council. On this ground the library is proposed to be built. The cottages are old—one of them is stated by Miss Marie Corelli to have been in existence before Shakespeare was born—but it is not so much their demolition that is objected to (in fact, it is suggested this might be justifiable for the sake of better protecting the birthplace from fire): it is the discordant note which the new library is bound to produce, however carefully it may be treated. One is surprised that this should have been ignored by an ex-mayor of Stratford to the public spirit of whose family the Memorial Theatre was due. We trust that the protest now being made will effectually prevent the erection of the library where its presence would be so undesirable.

Vox Populi. THE promoters of the competition for a new Baptist Chapel at Wavertree, Liverpool, evidently believe in selection by the majority. The conditions stated that a professional assessor would be appointed "to adjudge the plans and advise the committee in their selection," and that the competition, being an open one, would be regarded "strictly in accordance with professional etiquette." But we have before us the circular which they issued to persons interested, inviting them and their friends to inspect the designs (between thirty and forty of which were exhibited) and to give the committee the benefit of their judgment by entering their choice in a book provided for the purpose. This is indeed a new etiquette! Apart from the discourtesy to the assessor, the idea is perfectly foolish. What on earth does the ordinary layman know about architecture? It is difficult enough for a trained mind to make a selection out of a number of competitive designs—difficult enough when he knows what a plan should be, what is good construction, what is meritorious in an elevation. Yet here is the layman's opinion invited to supplement the assessor's, the layman who would choose the "prettiest" design and probably never give a look at the plan. We can only repeat that this is a pure piece of foolishness. It is astonishing that any committee should have shown such discourtesy to their assessor and exhibited such an ignorance of the "professional etiquette" which they are so eager to observe. It is just such abuses as this which bring the competition system into bad repute among architects.

For French Architecture. THE teaching of architecture in France is about to enter on a new era, and one which is likely to effect very considerable changes. Paris architects are, of course, all trained in the École des Beaux-Arts, and the result of that training is apparent in the city's buildings. Whatever others may think of it, whether or not they like its uniformity, its academic refinement, its studied orderliness, the French authorities believe in it thoroughly; so that they have decided to extend the system into the provinces. Candidates are to be examined all over France on the same day and their work adjudged by a committee of Parisian and provincial architects, the object being to secure uniformity of standard. The successful candidates, who will thus become students of the regional schools, will be placed on the same footing as their fellow-students in Paris, and may compete for all the Beaux-Arts prizes, with the exception of the diploma in architecture—yet for this, though it will still be held in Paris, provincial students will be able to gain the necessary "values" in their own towns. The Government has already notified the local authorities of its intentions, and a commission is about to start on a tour throughout the provinces to settle details. A subsidy will be granted to every school. It will thus be seen that French architecture is likely to become even more consolidated into one style. Naturally, the system is not without its disadvantages, but we have already pointed out that, so far as civic and monumental buildings are concerned, the results—taken as a whole—are far more satisfactory in the French capital than they are in London. Domestic architecture is another matter: there we may claim an undeniable superiority; but we could wish the architecture of our towns and cities were looked after so well as it is in France. While, however, we see the good points of this new Government scheme, we cannot forget that a similar practice is to some extent adopted by the South Kensington authorities; and we know from experience that the results in the provinces, under less competent (sometimes incompetent) masters, are not on a level with those of students in London working under the very best masters. But the French seem to be looking after their system better than we have done, and the defects we mention may possibly be so minimised as to be unappreciable.



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MEN WHO BUILD.

No. 69.—W. G. ROWAN, I.A.

ARCHITECTURE is a science, and as such is universal: it is also an art, and as such must always be individual. This is perhaps not thought of so much in considering the works of past ages as when considering those of the present time; but did we know sufficient of each dead style we should be able—and, indeed, often are, even without the aid of history—to detect the work of the individual in the style. To-day, when almost all the past styles are practised, personality is the charm we most naturally look for in our architecture. It may be carried too far, however, and so become mannerism; but in its proper place it is the *sign manual* of the master and an indispensable quality that goes to the making of architecture.

In the work of Mr. Rowan we find this individuality. It would be difficult to say exactly just where it begins and where it ends, but it is there unmistakably, even in a gas bracket or a door-plate, and it is this which gives his work its charm: it is distinctive.

Present-day architecture is specialized: we have ecclesiastical architects, school architects, and architects who make domestic work their particular study—besides quite a number of less worthy kinds of architectural specialism. These architects may not have started in life with the intention of specializing, but gradually, maybe almost imperceptibly, they have glided into a department of work for which they have won "a name."

Mr. Rowan has come to be known as a church architect, not because he has not done much excellent work outside its pale but because his works for this purpose are more numerous and characteristic. His domestic, school and other buildings have character unmistakably, but in his church work that character has a nobler expression, a freer flow.

As examples of his non-ecclesiastical work we publish drawings of a school at Thornliebank, of a small house at Busby and of a terrace of houses at Bo'ness.

In church work the architect usually has a freer hand, not always in expenditure (that is sometimes very rigorously curtailed), but the lines the architect has to go on are here more architectural in their possibilities. His fancy may be curtailed, but the broad lines of monumental purpose will remain if the architect has been artist enough to seize the possibilities of his problem. The chief obstacle that the architect (in Scotland, at least) has to contend with in ecclesiastical work is his church committee. Committees are always difficult to move, and their artistic ideal is generally a very low one. For example, galleries are insisted on, and probably around three sides of the church. Then the committee will not hear of a stone arcade: that obstructs the view, and the congregation must see as well as hear, and no æsthetic consideration will compensate for the lack of either of these. It is proposed that the architect use cast-iron columns, as spidery as possible, to support his galleries, and he is lucky indeed if able to persuade his committee to adopt anything more pleasing to the eye of the artist. Mr. Rowan has had his full share of these difficulties, yet in spite of them he has triumphantly produced many fine churches.

The admirable perspective views of Trinity U.F. Church, Pollokshields (by Mr. Alexander McGibbon), show how Mr. Rowan has managed to overcome these difficulties and, accepting the necessity of an organ, has clothed and made it part of the decorative scheme of the church interior. As another example, let us take the small village church at Tollcross, illustrated on p. 102. This church has been designed without extravagance of any kind, yet the effect both of exterior and interior is good. Other delightful examples of this picturesque treatment are his mission church at Bo'ness, his Norman church at Cambuslang, and his Perpendicular church at Blantyre.

But these are village churches, and, given a moderately liberal rate per sitting, an architect can always make something of his problem. It is in the town church that the architect encounters most difficulties. The site is limited and confined, the accommodation required large, the church committee exacting. The Wynd Church and Sommerville Memorial Church are examples in which these difficulties have been overcome. In his Cunningham Free Church, while Mr. Rowan has been equally successful in overcoming these obstacles and in retaining his ecclesiastical feeling, he has succeeded in conveying a modern note to his design.

It is in the mass and outline of his building that an architect shows his natural genius; it is in the working out of his plan, construction and detail that he shows his technical skill and assiduity of attention: Mr. Rowan has both, but the latter especially is very observable. In his fitments, particularly his ironwork, all of his designs are in their way excellent and distinctive.

Starting first of all with the classic style Mr. Rowan is, together with his former partner Mr. McKissack, responsible for several churches in this style. But he never appears to have developed on these lines; instead, he has gone entirely over to the Gothic school, all his recent churches being in the Perpendicular, or a free treatment of that style, with the exception of those in Norman or Romanesque. Like most architects, Mr. Rowan has done a good deal of competitive work. It is somewhat saddening to think how few of the best schemes are executed, or, if built, built in all their original splendour, and how many are cut down to the bone of bare necessity. Examples of churches one would have liked to see in stone are Mr. Rowan's competitive design for Belmont Church, his Juniper Green Church, and his St. Andrew's Church, Ayr.

Architecture is an art in the practice of which the ideal may very easily be lost. Unlike her sister art, Music, the material enters so largely into her conceptions that if this be withheld, or but sparingly granted in inferior qualities and insufficient quantities, there is a great danger of the architect degenerating into the mere builder. This being so, praise should always be given to the architect who, like Mr. Rowan, while battling with the problems of this life, ever holds firmly to the high ideals he has set before him. J. W.

Views and Reviews.

Art of the East.

Some considerable knowledge of Japanese, Chinese and Indian history is needed to understand this book properly, and even then we fear it will not be thoroughly intelligible to a Western mind—not even with the "notes" at the end of each chapter. The author is, we are told, the foremost authority on Oriental archæology and art, a man who is recognized by his Government and is regarded by the writer of the introduction to this book (one Nivedita, of Ramakrishna-Vivekânanda) as in some sense the William Morris of his country. It is the culture of Continental Asia, he says, that converges upon Japan and finds free living expression in her art; and its great characteristic elements are not a few drawings of plum blossoms, but the mighty conception of the Dragon; not birds and flowers, but the worship of Death; not a trifling realism, however beautiful, but a grand interpretation of the greatest theme within the reach of the human mind—the longing desire of Buddhahood to save others and not itself—these are the true burden of Japanese art. Into the intricacies of those ideals we do not propose to enter, neither into the religious systems, the beliefs and the dynasties of Japan which are dealt with throughout this book: instead we shall extract a few observations about architecture and sculpture. The primitive spirit of Japanese art—"that tender simplicity, that romantic purity . . . differentiating it at once from the leaning to monotonous breadth of the Chinese, and from the tendency to overburdened richness of Indian art"—was never allowed to die: "it modified the tilted roofs of Chinese architecture by the delicate curves of the Kasuga style, in Nara." This style was a development of the Shinto style of Isé and Idzumo, and is characterised by very delicate curves, which take the place of the straight lines of Yamato or pre-Japan architecture and the exuberant canvas-like curves of the Chinese: and it is interesting to note that the temples of Isé and Idzumo, both of wood, have each an alternative site on which they are rebuilt every twenty years in a style suggestive of development from the architecture of the bamboo cottage, or the log hut, still to be seen on the south-eastern coast of Asia. The first wave of Continental influence which swept over the art of primitive Japan, before Buddhism reached it in the sixth century, was that of the Hâng and the Six Dynasties of China (the first being Shin—hence Shin-land, China). The architecture of the Hângs—who spread Confucian ideals as the Romans did Hellenic culture—is characterized by gigantic palaces, adorned with caryatid pillars and profuse carving, colossal statues, stupendous towers and great structures in wood and brick—an era, too, of military works, when the Shin emperors left their memorial in the Great Wall.

With the formal introduction of Buddhism into Japan in A.D. 552 came the changing of palaces into Indian temples, when the stupa, translated into Chinese forms under the conditions of wooden architecture, became the pagoda. Sculpture followed a parallel course. The Nara period (700 to 800 A.D.) was one of immense bronze figures, culminating in the Roshana Buddha. The periods that followed saw returns from profuseness to severity, from luxury to refinement, till at length we reach modern times, with the meeting of East and West—and the great mass of Western thought becomes perplexing. "The mirror of Yamato is clouded, as we say . . . if there be indeed any spring of renewal hidden in our part, we must admit that it needs at this moment some mighty reinforcement, for the scorching drought of modern vulgarity is parching the throat of life and art." The task of Asia to-day becomes that of protecting and restoring Asiatic modes, and it is to that task Mr. Okakura applies all his wide learning and talent. He has already done much and his influence is felt increasingly for a strong re-nationalizing of Japanese art in opposition to the pseudo-Europeanizing which has done so much harm throughout the East.

"Ideals of the East, with special reference to the art of Japan," by Kakasu Okakura. London: John Murray, Albemarle Street, price 5s. nett.

Palestine Exploration.

In this book are set forth the results of two years of exploration in the "low country" of Judah—more especially at Tell es-Sâfi, which has been identified with Gath. The Turkish authorities stipulate that all objects discovered are to be the property of the Imperial Museum, the excavators having only the right to make drawings, photographs and casts. From these latter this book is profusely illustrated: but we must frankly confess that the great many pottery and similar objects discovered have no interest for us as an architectural and building journal. In looking at them, however, one sees again that the Jews had no art of their own, that their works were directed by their conquerors. At Tell Zakariya, not far from Jerusalem, a fortress was excavated (built of rubble laid in mud mixed with straw, without lime) which seems to have been the work of Rehoboam (2 Chr. xi. 5–10). At Tell es-Sâfi the ramparts of the ancient city were unearthed (the entire absence of mortar rules out the Crusaders as the builders). The wall is very rudely built and has been plastered in parts with mud and straw, over which is a whitish plaster made by mixing unburnt limestone with straw and water—a plaster used in Lebanon to this day. Inside the enclosure were found a number of chambers, some with the unmistakable fine diagonal chiselling of the Crusaders. At Tell ej-Judeideh the excavations chiefly consisted in tracing the city wall and the remains of a Roman villa: and at Tell Sandahannah the levels of two towns—the lower Jewish, the upper Seleucidan—were explored. Many interesting archæological finds were made, and these are particularly well described in detail by Mr. Macalister.

"Excavations in Palestine during 1898-1900," by Frederick Jones Bliss, Ph.D., and R. A. Stewart Macalister, M.A., F.S.A., with a chapter by Prof. Doctor Wünsch. London: Palestine Exploration Fund, 38, Condult Street.

W. G ROWAN, I.A.

The Compleat Carpenter and Joiner.

The promise displayed by the two first volumes of this elaborate work is well sustained by the third and fourth volumes, which are characterized by great thoroughness. They reflect much credit on the editor, Mr. G. Lister Sutcliffe, who contributes all the matter appearing in these two latter volumes. Vol. III. begins with a well-illustrated section on drawing and drawing-instruments which is altogether admirable. The next section, on Practical Geometry, is elaborate, but by its very elaboration destroys its usefulness as an instruction book for the beginner. It, of course, has value for reference purposes, when one desires to solve a problem exactly on the same lines as one in the book without taking any trouble to work it out, which would require a thorough knowledge of the principles; but to read it through would be as tiresome as most books on geometry are. There is no valid reason why the subject should be treated so confusingly. A master would be able to overcome the involved and awkward nomenclature generally employed and to deal with it entertainingly and instructively. The same criticism applies, though not in so great a degree, to the first section in Vol. IV., upon the theoretical mechanics of structures. Moreover, this section has the fault of all the text-books on carpentry and joinery that have been published—it is too elementary. Very little more space would have been required to treat the subject in an original and comprehensive manner. We notice that the more difficult problems of roof-trusses when subjected to wind-pressure and unequal and oblique loading are neglected as hitherto: but it is just these which the practical man requires solved. No examples of indeterminate forms are given. Then, again, no attention is paid to vibratory loads on structures; the necessity is apparent when we remember the recent disaster at Ibrox Park, Glasgow, where a wooden stand collaped, with fatal results—a disaster which arose solely from the ignorance displayed in the design of the stand. The section devoted to the physical and mechanical properties affecting the strength of timber is an excellent summary of the facts available, the tests which have been carried out, &c., but it has not been treated in any very original and informing manner. The section on Carpentry is commenced in this volume, the chapters dealing with joints, methods of lengthening timber, compound timber beams and carpenters' ironwork. This is very well illustrated with numerous clearly-drawn diagrams.

"The Modern Carpenter, Joiner and Cabinet Maker," edited by G. Lister Sutcliffe. Vols. III. and IV. London: The Gresham Publishing Co., 34, Southampton Street, Strand, W.C.

SOMMERVILLE MEMORIAL CHURCH, KEPPOCHHILL, GLASGOW. W. G. ROWAN, ARCHITECT.

LIGHTNING RESEARCH COMMITTEE.

Interim Report of Observations.

THE Committee formed two years ago by the Royal Institute of British Architects and the Surveyors' Institution to investigate the action of lightning strokes on buildings, with a view to the improvement of current methods of protection, have circulated among their observers a summary of cases recorded for the Committee of buildings struck by lightning and damaged during the year 1902.

At the beginning of the year the Committee considered that the previous year's observations had given them all the data needed as regards non-protected buildings, and they decided to confine their attention for the future to cases where buildings were struck and injured in spite of the provision of lightning-rods for their protection. Out of sixty cases recorded for the Committee in 1901 no fewer than twelve were of buildings fitted with some form of lightning-conductor. Considering the numerical ratio of protected to non-protected buildings, and allowing for the fact that protected structures are usually in some of their parts in more exposed positions than the non-protected, the proportion must be considered extremely unequal.

In face of some recent disasters brought to the notice of the Committee it is not surprising that dissatisfaction is felt with the system recommended by the Lightning Rod Conference of 1882. Last year the Committee's observers sent in reports of sixteen protected buildings struck by lightning—some slightly, others very seriously injured or entirely destroyed in parts. Details of these will be given in the final report of the Committee, together with comments. An interesting case may be quoted. It is that of a large country-house in Sussex, erected about twenty-eight years ago, and till recently without any form of protection. In 1901, a church in the immediate neighbourhood having been struck, the owner of the house, for greater security, decided to have lightning-rods put up. An elaborate system was installed, and completed in March, 1902, nearly every portion of the building having its own finial and conductor. During the storm season of last year the house was twice struck—on June 7th and on August 8th. On each occasion, besides other injuries, a chimney-stack was damaged, the brickwork being split up and the capping-stones dislodged and hurled about in all directions. The lightning-rods on the damaged chimneys were torn from their supports and much bent.

Other protected buildings recently struck of which reports have been received include All Saints' Church, Boyne Hill, Maidenhead; St. Andrew's Church, Mark's Tey, Essex; New St. Pancras Church, Marylebone Road; Swanscombe Church, Kent; St. Botolph's Church, Aidgate; St. Michael's Church, Highgate; Devaar Island Lighthouse, Argyllshire; South Foreland Lighthouses; Factory chimney, Nelson, Lancs; Cavendish Laboratory, Cambridge; Tiffin's School, Kingston-on-Thames; Ainsworth Mill, Lancaster.

All these cases are being carefully studied by the Committee. They hope to be in a position to report on the whole question of lightning protection at the end of the present year, and to offer some suggestions for more efficiently guarding buildings. Meanwhile they desire the continued co-operation of observers in this important enquiry, it being necessary that they should be supplied with as complete details as possible of "protected" buildings, to enable them to arrive at the causes of failure of the means of protection adopted.

The Committee are contributing an exhibit to the Loan Section of the International Fire Prevention Exhibition to be held at Earl's Court this year, and invite the loan of objects of interest appertaining to the subject for the purpose of adding to their collection. Anyone in possession of relics of lightning disasters, and willing to lend them, is requested to communicate with the secretary to the Committee at 9, Conduit Street, W.

The Committee is constituted as follows:—Mr. John Slater, chairman; Sir Oliver Lodge, Major-General E. R. Festing (Director of Science Museum, Victoria and Albert Museum), Mr. J. Gavey (Engineer-in-Chief, G.P.O.), Mr. W. P. Goulding, Prof. W. N. Shaw, Mr. H. Heathcote Statham, Mr. A. R. Stenning, Mr. Arthur Vernon (president of the Surveyors' Institution) and Mr. Killingworth Hedges, hon. secretary.

TERRACE AT BO'NESS. W. G. ROWAN, ARCHITECT.

WARMING.

By B. R. TUCKER, M.S.A., M.S.I., Late Chief Surveyor, War Office.

THE first part of Mr. Tucker's paper on "Ventilating and Warming," read before the Society of Architects on March 19th, was published in our last issue; the latter portion, which we were obliged to hold over for want of space, is now given.

Mr. Tucker said:—

There are three principal systems of heating rooms and buildings: (*a*) hot-water pipes, low-pressure, when the temperature does not exceed 212 degs. Fahr.; (*b*) hot-water pipes, high-pressure, when the temperature is about 350 degs. Fahr.; and (*c*) steam—about 350 degs. Fahr.

Open Fireplaces.

The domestic open fireplace is the most popular form of heating. It acts chiefly by radiation. It is extravagant, as much of the heat passes up the chimney; at the same time it acts as a good ventilator; consequently no inhabited room should be without a fireplace. The Teal slow-combustion grate and others of similar construction are an immense improvement on the "Register" and similar patterns. Fireplaces should be placed in the inner walls of houses, where they warm the house generally.

Closed Ventilating Stoves.

These stoves are of great service in large rooms; they are more economical in fuel than open grates and they distribute the heat much more satisfactorily. They are apt to get too hot, and by so doing burn the organic matter in the air and produce an unpleasant smell. This description of stove should be lined with firebrick and have air-channels formed in it for heating the fresh air with which it should be supplied by means of a duct communicating with the external air.

Gas Stoves

have come largely into use, but until gas is supplied at about 1s. 6d. per 1,000 cub. ft. (which it could be if required for heating purposes only) heating by gas stoves must be more expensive than by coals. Gas stoves should never be used unless they have a proper flue for removing the products of combustion. They are cleanly and very convenient.

Ventilating Grates.

These grates have an open fire and are constructed on the most approved principle; they have a chamber behind for warming the fresh air which is supplied by a duct connected with the external air. The air when warmed in the chamber is conveyed up a flue passing at the side of the smoke flue, and escapes through a louvred opening in the chimney breast. Galton's grate, used in barrack-rooms, is on this principle. It is most economical in fuel, as all the heat generated is utilized in warming the room. A certain quantity of heat, of course, passes up the chimney, but that is of service in assisting ventilation by causing the vitiated air to pass more freely up the smoke flue. As these grates warm only half the fresh air admitted into the room, they cannot overheat the air generally so as to render it too dry.

Hot-Air Apparatus.

In this system the fresh air is admitted into a chamber (generally placed in the basement) where it is filtered and warmed by passing it through a stove, which should be of large area and moderate temperature, rather than small, requiring a high temperature which would render the air too dry. After being warmed, it is conducted along ducts of proportioned sizes and discharged through grated openings in the floor of the room. This method of warming is sometimes adopted in halls, churches and similar buildings. It is difficult to ensure a uniform distribution of the air throughout the building. It requires great attention to prevent over-heating, by which the air would be rendered too dry for breathing. The warmed air is liable to some pollution by being conveyed through dusty ducts or channels on its way to the outlets in the floor. There is another and greater objection to this system of warming—it is that the air is warmer than the walls and furniture; consequently, the bodily heat of the occupants is radiated to these, causing, as a consequence, a sensation of draught or chill, whilst the bodily resistance to chill is reduced by the enervating effects of warmed air. To ensure the proper working of this system, it should be assisted by hot-water pipes and radiators, for the purpose of heating the surfaces of the walls and windows.

ST. JOHN'S WESLEYAN METHODIST CHURCH, SAUCHIEHALL STREET, GLASGOW.
W. G. ROWAN, ARCHITECT.

Hot-Water, Low Pressure.

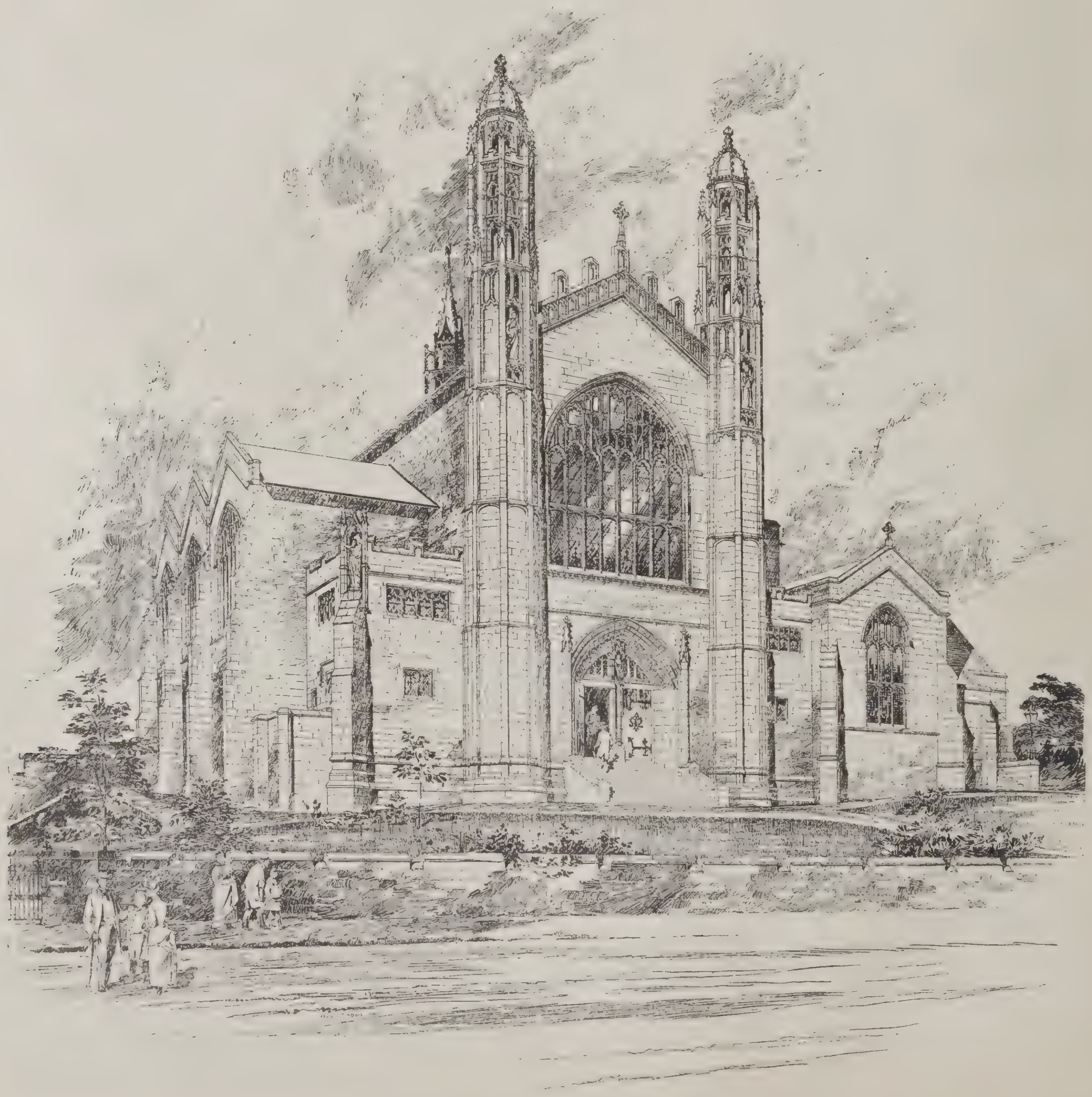
This apparatus consists of a boiler (usually placed at the lowest position) from which cast-iron circulating pipes of 2in. to 4in. diameter pass round the portions of the building to be heated. The principal circulating pipes are called "flow" and "return"—the former convey the heated water from the boiler and the latter return the cooled water back to the boiler to be re-heated. From these pipes the supply pipes to coils and radiators are connected. A supply cistern is placed at the highest point, to replenish any waste in the water, and to permit of its expansion when heated. The water is seldom heated above 180 degs. Fahr., and never beyond 212 degs. Care should be taken to remove all air in the pipes, by means of air vents or taps. This system is the most general in use; it is safe and efficient, easily worked and economical. It supplies a moderate wholesome heat, and as there is a large body of water the heat is more uniform than in any other apparatus. This system is the only one suited for horticultural buildings.

Hot-Water, High Pressure.

This apparatus consists of a continuous circuit of stout pipe, having an internal diameter of from $\frac{5}{8}$in. to $\frac{7}{8}$in., according to the size of the installation. One portion of the circuit, from $\frac{1}{12}$th to $\frac{1}{6}$th of its length according to circumstances, is formed into a coil, which is placed in a stove or furnace, by means of which the apparatus is heated; the remaining portion of the circuit is distributed throughout the several rooms to be heated. The water, when heated, flows from the top of the coil in the furnace to the highest point of the building and thence back to the bottom of the coil to be again heated. Provision is made for the expansion of the water when heated by the insertion of an expansion tube at the highest part of the circuit. This expansion tube is so proportioned that it prevents an undue pressure on the pipes which might cause them to burst. The expansion tube should equal about $\frac{1}{10}$th the capacity of the pipes. The pipes are filled with water and then sealed up and tested to about 2,500lbs. to the sq. in. In practice they are often heated to 350 degs. Fahr., or 9 atmospheres, about 135lbs. to the sq. in. The advantages of this system are that the pipes are small and neat and may be placed in positions where the larger low-pressure pipes could not be admitted for want of space—such as behind skirtings or in narrow spaces beneath windows. They can also be used for heating apertures for the admission of fresh air in almost any position not possible for larger pipes. The heat by this system is quickly raised, in consequence of the small quantity of water it contains, and of course as quickly lowered, should the fire slacken. This system is especially suited for drying-rooms and for japanning works. It is not suited for horticultural buildings. All hot-water systems have the advantage of supplying any modified temperature that may be required to suit the varying requirements that exist during spring and autumn.

Heating by Steam.

Although this mode of heating may not, for general purposes, be preferred to heating by hot water, at the same time it is especially suited for very high buildings, where the pressure of heating by water would be too great. Heating by steam is quick in its action; at the same time, should the fire slacken the heat quickly diminishes—this is not so with the hot-water low-pressure system, where the heat is more retentive. Heating by steam is more difficult to regulate than by hot water. It, however, has one advantage—it is frost-proof; from the moment it ceases to act the pipes and radiators at once become empty. It is a very economical and useful mode of heating in factories, where the exhaust steam from the engine can be utilized. Heating by steam is very largely used in America. It has a great advantage in that it is suited for groups of buildings that may be considerably scattered or distant from the source of heat. The difference in volume between water and steam allows smaller pipes, radiators, &c. to be used in the case of the latter; consequently, it is cheaper to instal. It is important to note that 1 cub. ft. of water will produce about 1,600 cub. ft. of steam at atmospheric pressure; also, to bear in mind the important peculiarity in the quantity of heat required to produce steam—known as the *latent* heat of steam. To heat water from zero to the boiling-point at atmospheric pressure requires 212 degs. Fahr., but to convert the water from boiling-point into steam requires four to five times as much heat, although the steam will not appear to possess an increased temperature: however on its being condensed to water, this *latent* or hidden heat is given out again and renders good service in the heating of buildings. The heat of the steam is utilized for the purpose of heating by its being condensed to water in radiators. The position and size of the radiators should be carefully considered; they should be placed under windows and in other positions where the greatest amount of cool air emanates. Care should be taken that the condensed water can freely flow back to the boiler, and attention should



TRINITY U.F. CHURCH, POLLOKSHIELDS, GLASGOW. W. G. ROWAN, ARCHITECT.

be given to details, as regards air in the pipes.

Calculating the Surface of Radiators and Pipes.

In calculating the superficial area of the pipes and radiators required to heat a room or building, both for hot water and steam, it is important to take into account the area of the glass in the windows, together with the cubic capacity of the room, at the same time taking into consideration the quantity of fresh air admitted per hour, thickness and nature of the walls, &c., and whether the building is exposed or not.

Adaptations of the Systems.

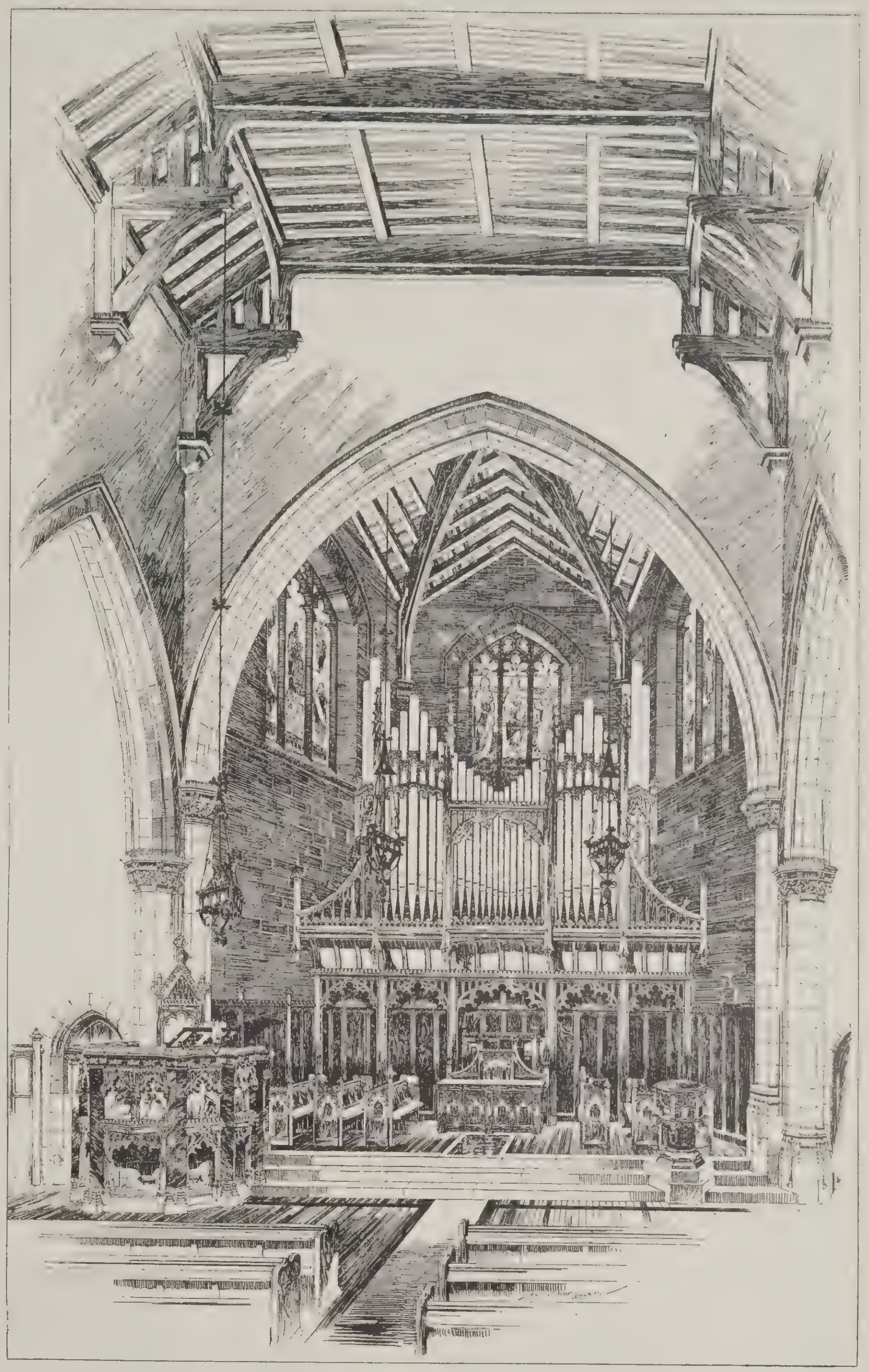
Small Rooms.—Open fireplaces of the modern slow-combustion type.

Large Rooms.—Open fireplaces having ventilating grates of the Galton type, assisted by radiators and also by coils placed in cases under the windows. Open stoves of the ventilating type might be substituted for the open grates, if preferred.

Churches, Public Halls, &c.—Hot-water, low-pressure, if practicable, employing radiators (enclosed in cases if desired) placed under windows and in other places where cool air is met. The heating of churches and similar buildings requires great care. Usually the heating is by pipes inserted in ventilated trenches, situated in the aisles, and covered by iron gratings flush with the floor. The objections to this mode of heating are—at least 20 per cent. of the heat is lost, resulting in a waste of fuel to that extent; also the open gratings admit quantities of dust and dirt which lodge on the pipes, where they become burnt and so render the air insanitary. A more economical and better arrangement would be to heat the building by *indirect* radiators placed above the floor. Some should be placed in recesses in the outer walls; flues should be formed from the recesses to the sills of the windows above for the purpose of warming the glass. The large west windows of churches would probably require two radiators of 100ft. superheating-surface each. The clearstory windows might be heated by a pipe (high-pressure) supported upon a label moulding hollowed out for the purpose. Draughts in churches and similar buildings, which are so frequently the cause of serious complaint, might be practically abolished if attention were paid to the warming of the glass of the windows, so that it practically offered the same resistance to the cooling effect of the outside air as do the solid portions of the walls of the building. Other *indirect* radiators should be placed in convenient positions so as to produce sufficient heat to satisfactorily warm the building. The hot-water high-pressure system should be employed in situations where space will not allow large pipes or radiators to be placed.

Very high buildings and those placed at a distance from the source of supply of heat should be heated by steam, as it is more economical and convenient.

The Edinburgh Architectural Association.—The Associate section of the Society held their seventh ordinary meeting on March 18th. Mr. J. Douglas Traill occupied the chair. A number of lantern slides embracing many different subjects were shown. Mr. B. S. Murphy showed a series of slides of ironwork at Bellin House, Drayton House, and some of the best block work. Mr. J. A. Arnot gave interesting notes descriptive of his slides on Oxford and modern cottages. Mr. J. Stuart Syme illustrated his remarks on Italian Renaissance with some excellent slides. Other members, including Messrs. D. Ramsey, W. Davidson, T. Y. Rutherford, James Gillespie and John Wilson, supplied interesting notes on slides representing various subjects, such as the cloister of the English Cathedral, the Fountain of Versailles, and Scotch and English ecclesiastical work. The meeting was well attended.



TRINITY U.F. CHURCH, POLLOKSHIELDS, GLASGOW.

Bricks and Mortar.

Aphorism for the Week.

Talent is that which is in a man's power; genius is that in whose power a man is.—LOWELL.

The Rhind Lectures. MR. THOMAS ROSS, architect, this year's Rhind lecturer in connection with the Society of Antiquaries of Scotland, delivered the first lecture of the course in the lecture hall of the National Portrait Gallery, Edinburgh, on March 23rd. The subject of the course is "Secular buildings erected in Scotland from the earliest period to the seventeenth century." The examples, said the lecturer, for the very early part of the subject are necessarily incomplete and fragmentary. There are probably no remains of pre-Roman dwelling-houses in Scotland, but there is evidence of great tomb structures, and the opinion is probably well founded that these latter are a reflex of the houses; and although the dwelling-houses have thus perished, it is quite possible and highly probable that they survive in modern instances in remote places. The earliest surviving type of human habitation built of stone is probably the "bee-hive" house, of which there are several examples in the western islands. They are of small size, 7ft. or 8ft. in diameter, and of a height sufficient to stand upright within, access being obtained by creeping in by the small doorway. The principle of their construction is good; it is practically the same as that of the mediæval spire, so that these houses were likely to be enduring. Existing remains may thus have come down from a very early period. In the thickness of the walls useful recesses and even small chambers were sometimes constructed, and an example of an early house from the Long Island shows a group of what may be called twelve bee-hive houses grouped together, some of which look like single-roomed houses, and others apparently of a larger size. Another remarkable group in the Bay of Skaill, Orkney, consists of a number of rooms or cells, knit on to what seems a common passage, and

ST. MARGARET'S CHURCH, TOLLCROSS, GLASGOW.

a modification of this exists at Stanabreck, North Ronaldsay; while at Howmae, in the same locality, there is a most complicated plan of what appears to have been two houses with some separate cells, a workshop, and two places for cattle, about thirteen places in all, of the most complicated and irregular plan one could well imagine. These houses have all a uniform construction, built on the surface of the ground, and with stones without lime or cement, and having converging walls and roofs of stone slabs. Maeshewe, one of the largest chambered tombs, has the great covering mound. The interior is a Greek cross on plan, with a small cell in three limbs and the long entrance passage in the fourth limb. The internal angles of the cross are composed each of a single stone of great size. These assist in supporting the roof, which is formed by overlapping courses. Maeshowe is a building of considerable architectural merit. The lecturer concluded with a brief reference to the underground houses found scattered over the area of Scotland, principally in the eastern side.

St. Bartholomew-the-Great. Mr. E. A. Webb, F.S.A., recently delivered a lecture at the ancient priory church of St. Bartholomew-the-Great, Smithfield, London, on the changes which the fabric has undergone from its foundation by Rahere to the present time. Mr. Webb dealt with Rahere's life in Rome, and the vision during his convalescence from fever which led to his return to England and the establishment of the church and hospital "in the suburbs in Smithfield." The Norman church was the work of Rahere; the transepts, the crossing, and the first bay of the nave, showing ornaments of the Transition period, were begun by Prior Thomas. The original nave, standing on what is now the graveyard, where some bases of pillars may be seen, was probably Early English. In the first decade of the fifteenth century extensive alterations were made. The Lady Chapel was rebuilt, with a crypt beneath. The original clearstory was replaced by that which now exists. About this time the tower was probably rebuilt, as the corbels of the West arch and the capitals of the Norman shafts on the North side have Perpendicular mouldings. To this period belong the tabernacle work and panels of the founder's tomb. Successive priors altered and modified the buildings; the oriel window in the centre arch of the Norman triforium on the South door and the door in the South ambulatory were added by Bolton, who built Canonbury Towers. After the surrender to the King by Fuller, the last prior, in 1539, the nave was destroyed, the present West front built, and the Lady Chapel and the conventual buildings sold to Sir Richard Rich. According to a document recently discovered in the Record Office by Mr. Webb, early in the seventeenth century, the Lady Chapel was used as a dwelling-house. It was afterwards occupied as a fringe factory till 1885. The church was of very great interest, showing, as no other church in London did, the various architectural periods; and the restoration (commenced in 1863) partly from designs by Mr. Aston Webb, A.R.A., had been carried out successfully. No one could mistake the new work for old; but the new harmonised extremely well in colour and style with the original. The special object of the lecture was to awaken interest in the recovery and restoration of three bays of the ancient cloisters, which are all that are known to remain. These adjoin the South wall, so that access could be gained therefrom through the original Norman entrance now walled up. These arches are of the fifteenth century, in a fair state of preservation, and their acquisition is very desirable. The other parts of the cloisters have been demolished to make room for, or been incorporated in, secular buildings.

German Municipal Exhibition. THE German Towns Exhibition will be held at Dresden from May 20th to the end of September next. The objects of the exhibition are—(*a*) to show the condition of German towns at the beginning of the twentieth century, especially the development of the larger German communities in the last ten years, and the progress made in the various branches of local administration in that period; (*b*) to exhibit the productions of German manufacturers for the use of the local administrations. In the towns division there will be formed groups, namely:—(i.) Communications, lighting, street-making, drainage, bridges, and harbours, including all underground construction and surveying, tramways, &c.; (ii.) town extension, control over building and dwellings; (iii.) art matters (architecture, painting, sculpture, &c.); (iv.) public health and welfare; (v.) schools and education; (vi.) poor law, hospitals, charity; (vii.) finance, rates, industrial undertakings belonging to towns, ground ownership, savings banks and pawnbroking; (viii.) registration and office arrangements, public employees, statistics and literature. Some towns and firms will exhibit portions of streets of natural size showing all that is over and all that is under the surface, such as surface-water drains, other drains, wires, water and gas pipes, &c. In the other division about 300 of the most important German firms have already announced their participation.

R.I.B.A.

FIRE-PREVENTION.

A MEETING of the Royal Institute of British Architects was held on Monday evening last at 9, Conduit Street, W., the chair being occupied by Mr. John Slater.

Mr. Horatio Porter, A.R.I.B.A., read a paper on "Fire-Prevention."

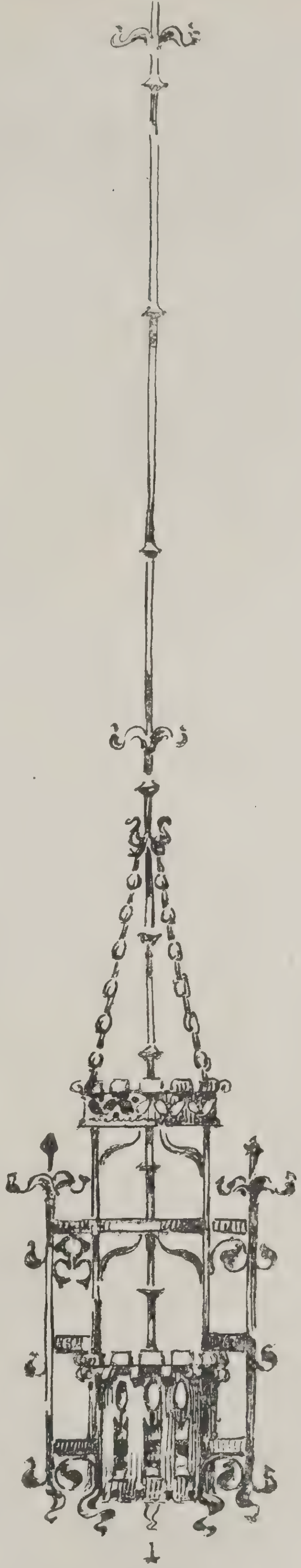
After referring to the fire risks of defective hearths and flues, joinery, &c., he went on to speak of building materials. Mr. Porter said:—Good brickwork is no doubt best for fire-resistance. The chemical composition of the clay is the great element in determining both the fire-resisting and weight-carrying properties of a brick, which depend chiefly on the proportions of silica and alumina in the clay, and, secondly, on the oxide of iron, lime, magnesia, potash, &c. Terra-cotta used for structural purposes may be porous or hard-burnt. The porous is made by the addition of some combustible material, such as sawdust or finely-chopped straw, to the pure clay, which is then burnt under great heat. By this means the straw or sawdust is consumed, leaving the clay in a porous state. Hard-burned terra-cotta is made from pure clay without the addition of any combustible substance. The porous form is non-conductive of heat, but does not carry weight so well as the solid; and if the straw or sawdust has not been thoroughly burnt out of it there is danger of disintegration under the combined effects of fire and water. The hard-burned terra-cotta has to depend greatly on the hollow spaces with which the blocks are moulded, and is liable to crack on being suddenly cooled. For the protection of girders or columns, where it has little or no weight to carry, the porous form seems the best.

Discussing the fire-resisting qualities of mortar, plaster and cement, Mr. Porter referred to a series of tests with cement-mortars carried out in Chicago in 1896. From these it was deduced that concrete floors might after a fire-test hang together under heavy loads, but they are nevertheless weakened—to what extent depends upon the duration of the heat. Cement-mortar can hardly be relied upon to resist high temperatures satisfactorily. Common lime and sand-mortar in small quantities has probably greater fire-resisting properties than any other plastic material, and would be a better protection than cement-mortar if it were strong enough to be used to a thickness of, say, 4in. or more.

As regards concrete, tests have been made by which the material has been subjected to as much as 1,976 degs. Fahr. for several hours, and allowed to cool slowly, and also suddenly by application of water. The concrete composed of sand, gravel or stone mixture crumbled, or gave signs of great weakness, while that composed of cinders showed good coherence and did not suffer by wetting while hot. The highest degree of coherence was found in a mixture of 1 part cement to 7 of coarse cinders. The conclusion is that where concrete has been made with care and knowledge it will bear very high temperature for a long time, even with the application of cold water.

Wrought-iron, cast-iron and steel, although non-inflammable, are not good fire-resisting materials, and must be cased in some fireproof covering. Unprotected iron may not itself suffer by fire, but its expansion under great heat may cause serious damage to the building. Steel will expand 1in. in 125ft. for every 100 degs. Fahr.

Combustible materials for the fitting up of buildings should be used as sparingly as possible. Shelves might in many cases be made of wire-netting supported on metal uprights; counters might be constructed on the principle of fireproof doors and shutters. The use of wood, however, cannot be eliminated altogether. Careful tests seem to prove that wood can be so treated as to be made efficiently fire-resisting, that the treatment does not injure it for structural purposes, and that its effect is permanent. But the process adds about 30 per cent. to the cost of joinery in soft woods; hence it is too expensive at present for general use.



PULPIT LIGHT FOR CATHCART U.F. CHURCH.
W. G. ROWAN, ARCHITECT.

The author went on to consider the treatment necessary for the different purposes for which well-holes are required—dealing first with well-holes and light shafts; secondly, with well-holes for stairs and lift enclosures. The use of wire-glass in iron frames for skylights in well-holes is desirable, as it helps to prevent the fire from bursting through from below or burning embers falling in from above. Wire-glass withstands not only great heat but also the sudden cooling when water is poured upon it. It is not only admirably suited for skylights, but also for warehouse windows overlooking narrow well-holes or streets.

Judged from the standpoint of fire-resisting design, the usual position of staircases and lift shafts in mercantile offices and hotels is wholly wrong. Such well-holes should be enclosed by fire-resisting walls, with access to large floors or corridors by doorways only, which could be fitted with fire-resisting doors. The walls enclosing well-holes should be carried through and above the roof in the same manner as party-walls, and the skylights over should be of thick plate-glass, or preferably wire-glass. Extra fireproof doors for stairs and elevator openings are recommended. To check the rush of flame up a shaft a system of automatic sprinklers might be fitted round the sides of the opening near the roof, or perforated pipes in connection with an outside standpipe would serve the purpose. A staircase made of oak or teak, with 2in. treads and risers and soffits, and the spandrels filled in solid with some hard wood, the author thought, would be found the most reliable.

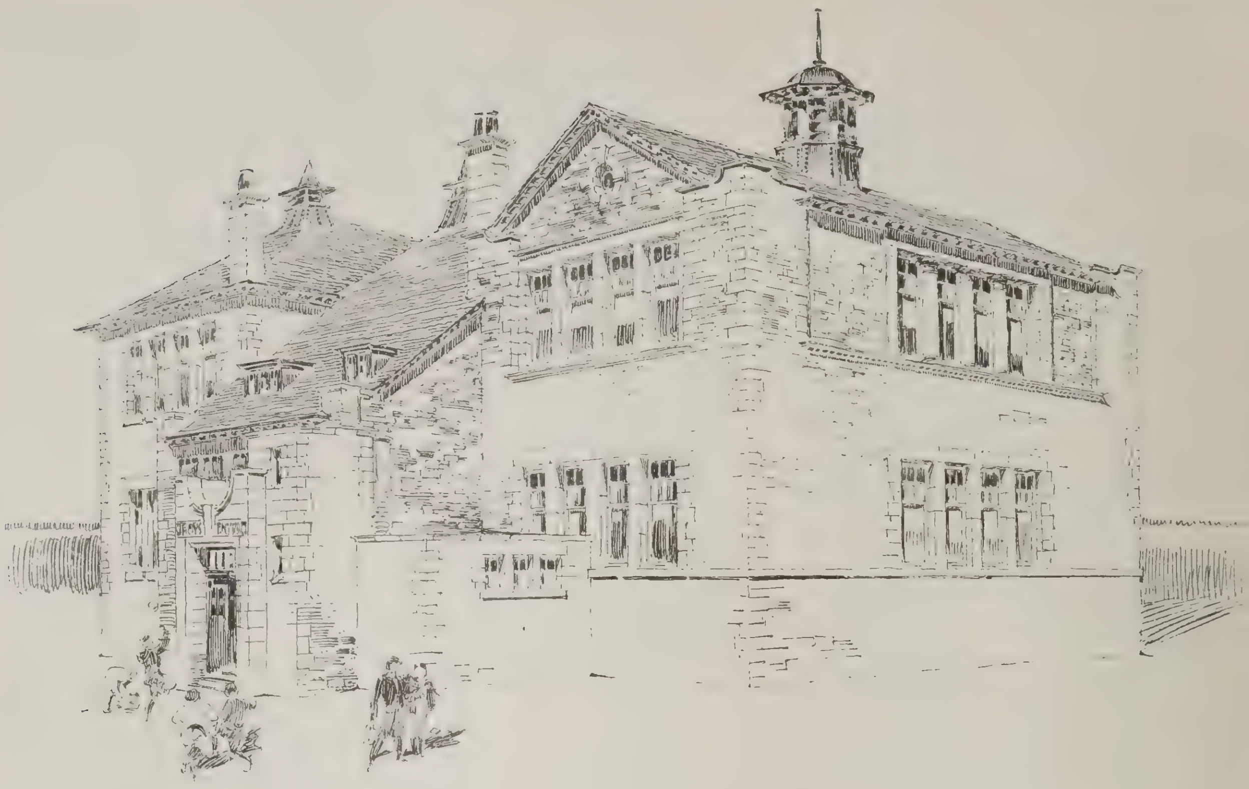
Fire-resisting floors the author classed as (1) concrete, (2) terra-cotta or brick. Some half-dozen exceedingly severe tests have been made of concrete floors, and not one of the floors failed. Experimental tests show that hollow tile arches, of good design and not too long span, have a strength sufficient to be safe under any load likely to be brought upon them in any ordinary building; also that their resistance to fire is entirely satisfactory, except that the dense tile is likely to go to pieces if struck by a stream of water when heated.

A satisfactory fire-resisting covering for columns and girders may be of plaster, concrete, brick or terra-cotta. Metal lathing should only be used where plaster is adopted for the covering material, and the column should be first wrapped with asbestos lining bound with wire.

The author next described the best forms of fire-resisting partitions. It is most important that terra-cotta partitions should start directly upon the masonry of the floor, and the terra-cotta blocks should be of sufficient width to secure stability.

In conclusion, M . Porter suggested giving as a subject for a students' competition the designing of a hotel, retail store or mercantile house, on fire-resisting principles, having special regard to internal effect in the first two cases and in the third to economy of space.

A discussion followed in which Mr. Searles-Wood, Mr. Thomas Blashill, Mr. Mead (of the Sun Fire Office), Mr. Lewis Solomon, Mr. Henry Lovegrove, Mr. Lewis Bax, Mr. Max Clarke and Mr. Slater took part. Our report of it, for want of space, is held over till next week.



BUSBY PUBLIC SCHOOL. W. G. ROWAN, ARCHITECT.

Builders' Notes.

The Sheffield Master-Builders' Association held their first annual dinner on Thursday last, the chair being occupied by the president, Mr. A. J. Forsdike.

Hibernian House, Dublin, has recently been fitted with improved hot-water heating apparatus by Messrs. John King, Ltd., engineers, Liverpool.

The General Hospital, Jersey, has been supplied by Messrs. E. H. Shorland & Brother, of Manchester, with their patent Manchester grates and stoves.

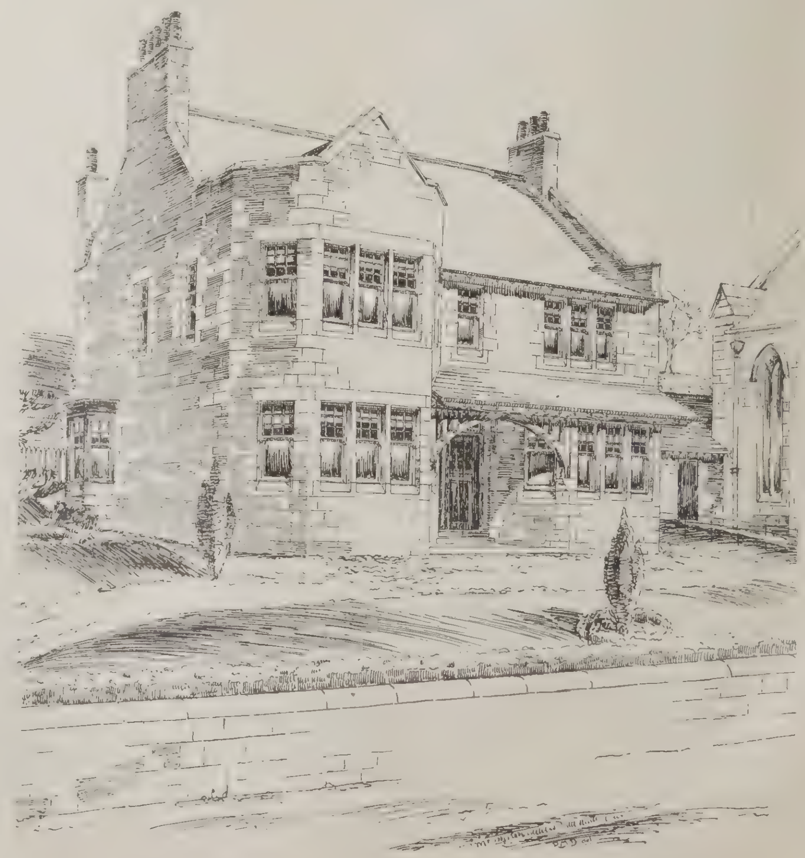
A new Slag Brickworks is to be established close to Messrs. Walker Maynard & Co.'s Coatham Iron Works, Redcar, from which the slag will be obtained. It is expected the new concern will give employment to about fifty men.

Shipping Marks on Timber.—The 1903 edition of the excellent "List of Shipping Marks on Timber," published by "The Timber Trades Journal," has just been issued. It has been considerably enlarged, numerous maps of districts from which timber is obtained being included, and lists of shippers (with marks and descriptions of the timber rough and worked which they supply) who have recently come into the market. Lists of shippers, &c., of timber from Sweden, Norway, Finland, Russia, Germany, Austria, Canada and the United States are given. To the timber merchant or the large contractor the book is invaluable and a necessity. The price is the low one of 6s. in cloth and 7s. 6d. in leather. It is published by Messrs. William Rider & Son, Ltd., of 164, Aldersgate Street, E.C.

A Use for Slate Waste.—For many years past the question of how to deal with slate waste and refuse from the quarries has been exercising the minds of quarry proprietors. Some years ago an attempt was made by the officials of the Penrhyn quarry to deal with the trouble, but it did not succeed. A Carnarvon man, Mr. Vincent Groom, now claims to have discovered a secret whereby the waste can be transferred into profitable commercial articles. By pulverising the slate refuse into dust and the use of certain chemicals, the waste can be turned into blocks of stone that will, it is claimed, stand a pressure of 100 tons to an inch more than any other.

A new Sanitary Material.—Mr. William E. Farrer, engineer and sanitary specialist, of 36, Cannon Street, Birmingham, has recently fixed at the Oxford Circus underground convenience a sample stall of "Torfit," the new material for urinals, where it is now on trial as arranged with the Sanitary Institute.

"Torfit" is a specially prepared, highly d
infectant composition, upon contact wi
which urine immediately becomes innocuo
thus preventing the insanitary and noxic
smells usually inseparable from urinals.
is formed in slabs of suitable size for urir
backs, ends, divisions, channel and flo
treads, which take the place of earthenwa
slate, &c. "Torfit" urinals, in addition
being comparatively economical in first co
it is claimed, effect an enormous saving
cost of water for flushing purposes.



GREENBANK MANSE, BUSBY. W. G. ROWAN, ARCHITECT.

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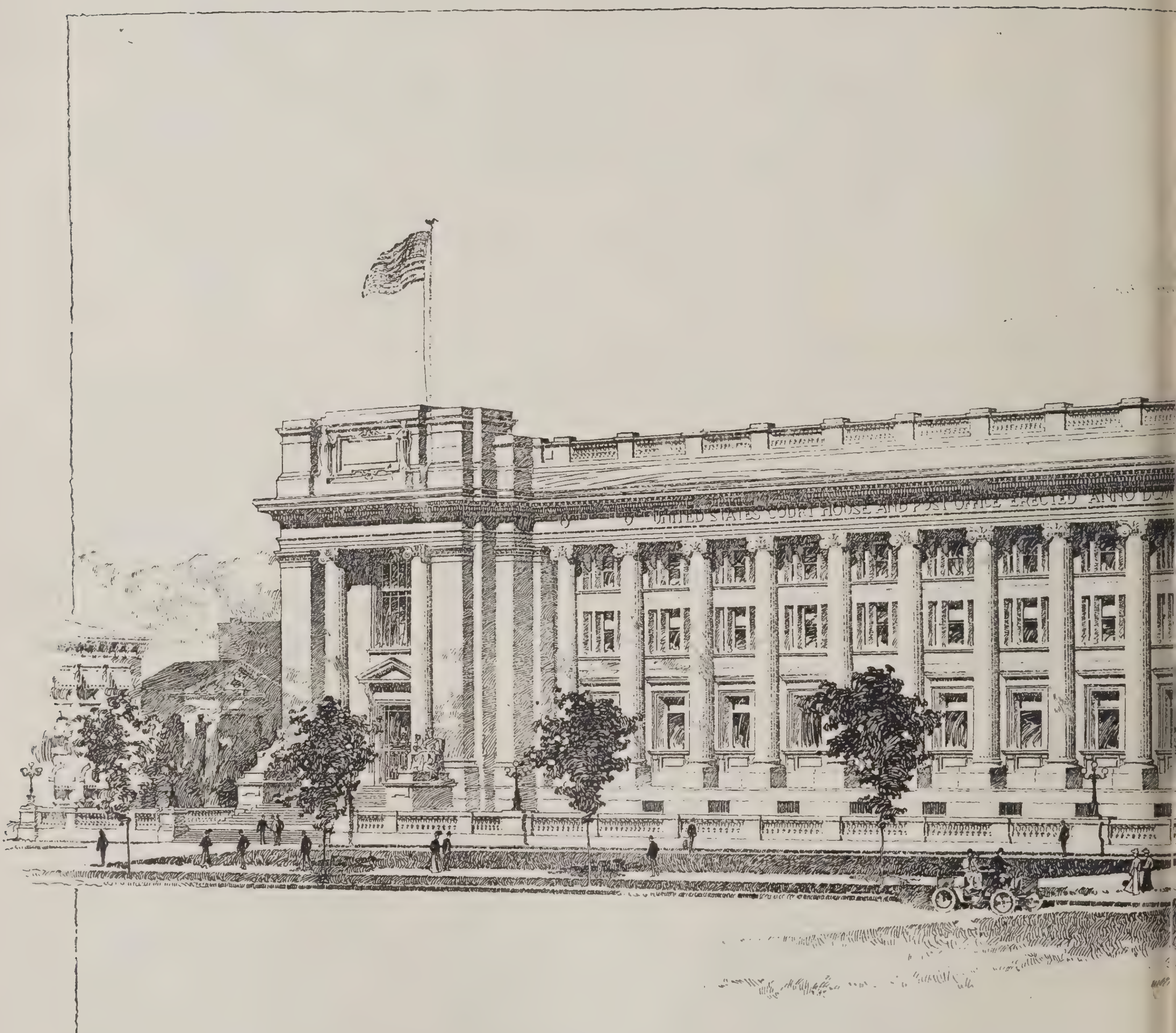
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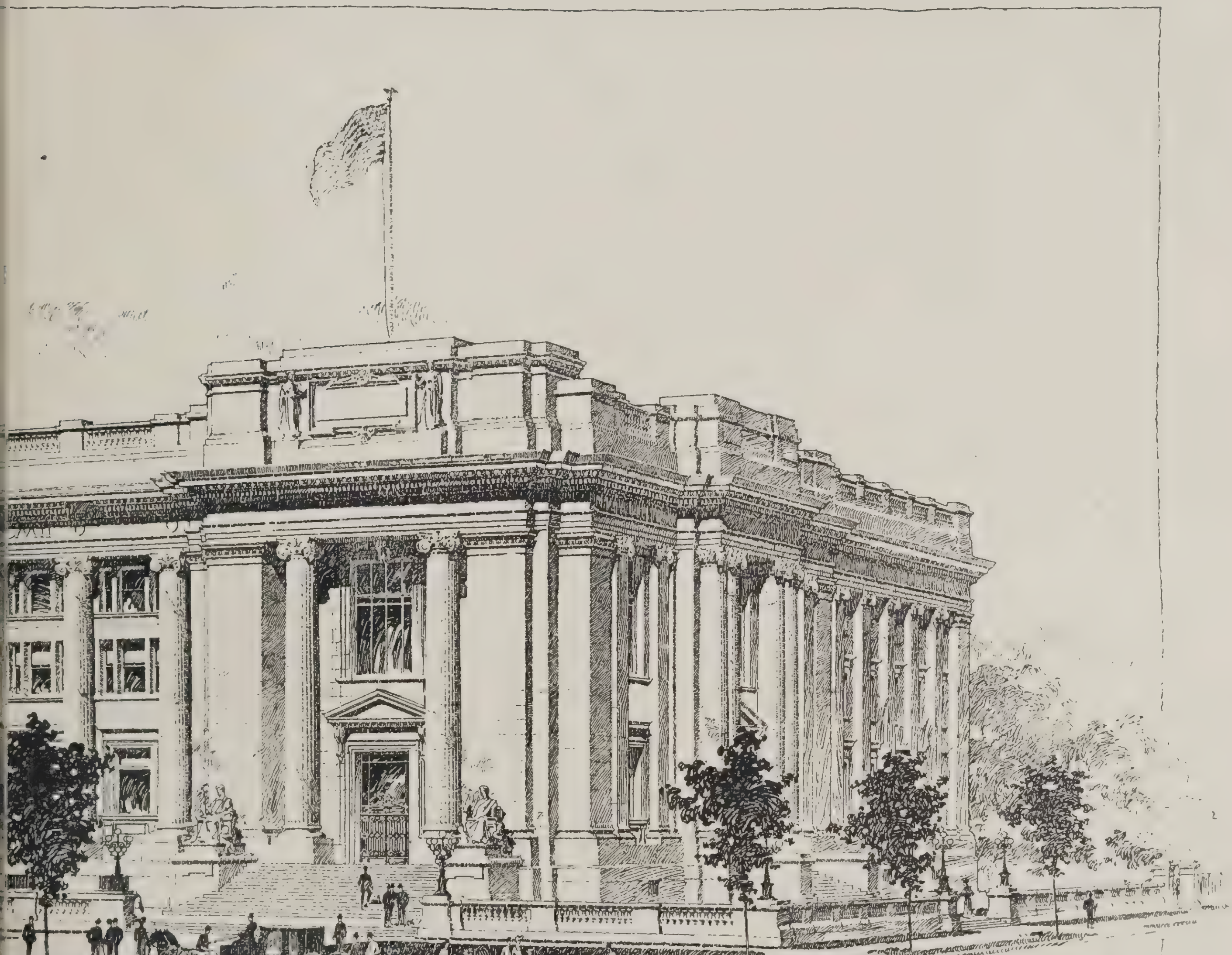
UNITED STATES COURT-HOUSE AND POST OFFICE, INDIANAPOLIS. RANK



KELLOGG, ARCHITECTS. JOHN KNOX TAYLOR, SUPERVISING ARCHITECT

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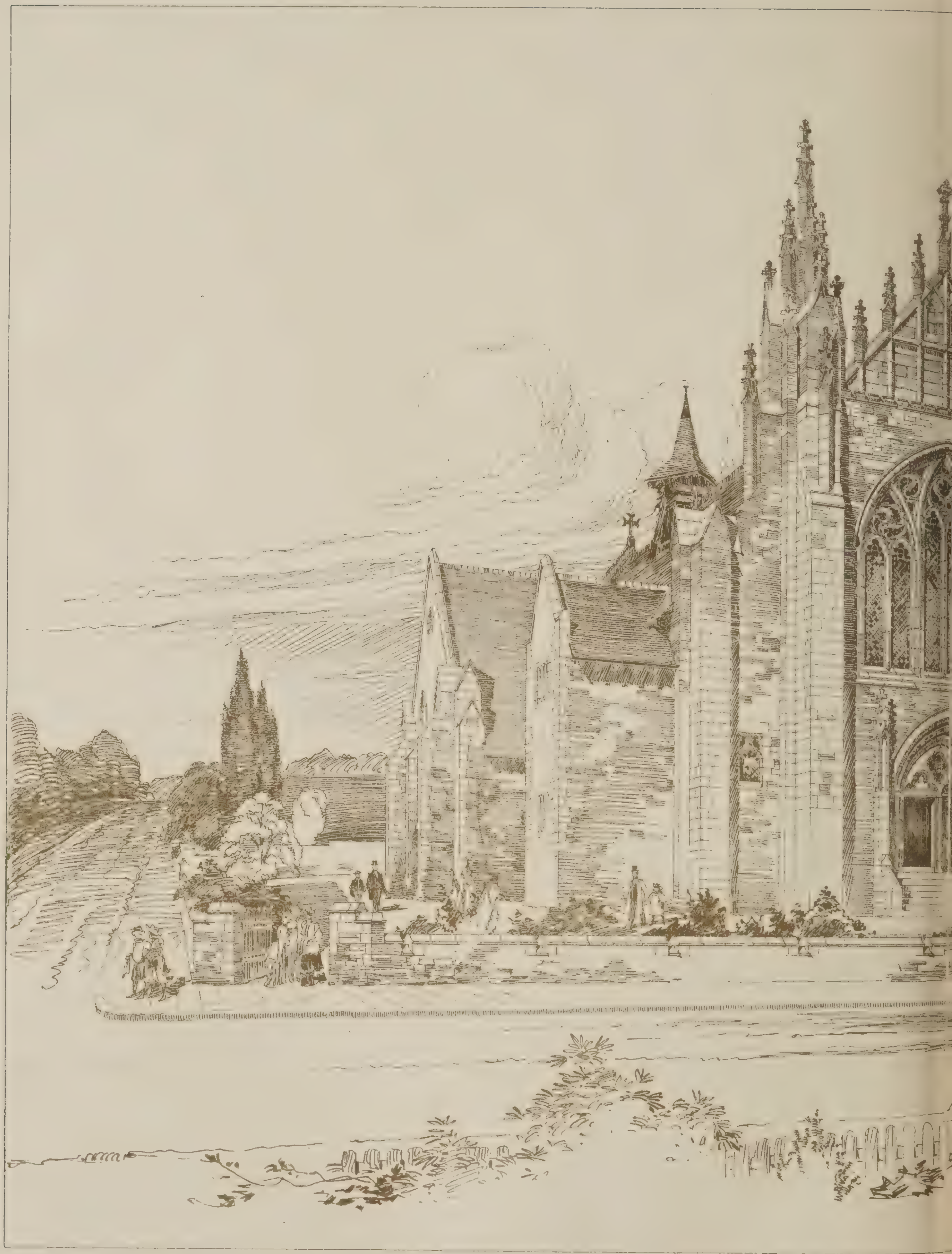

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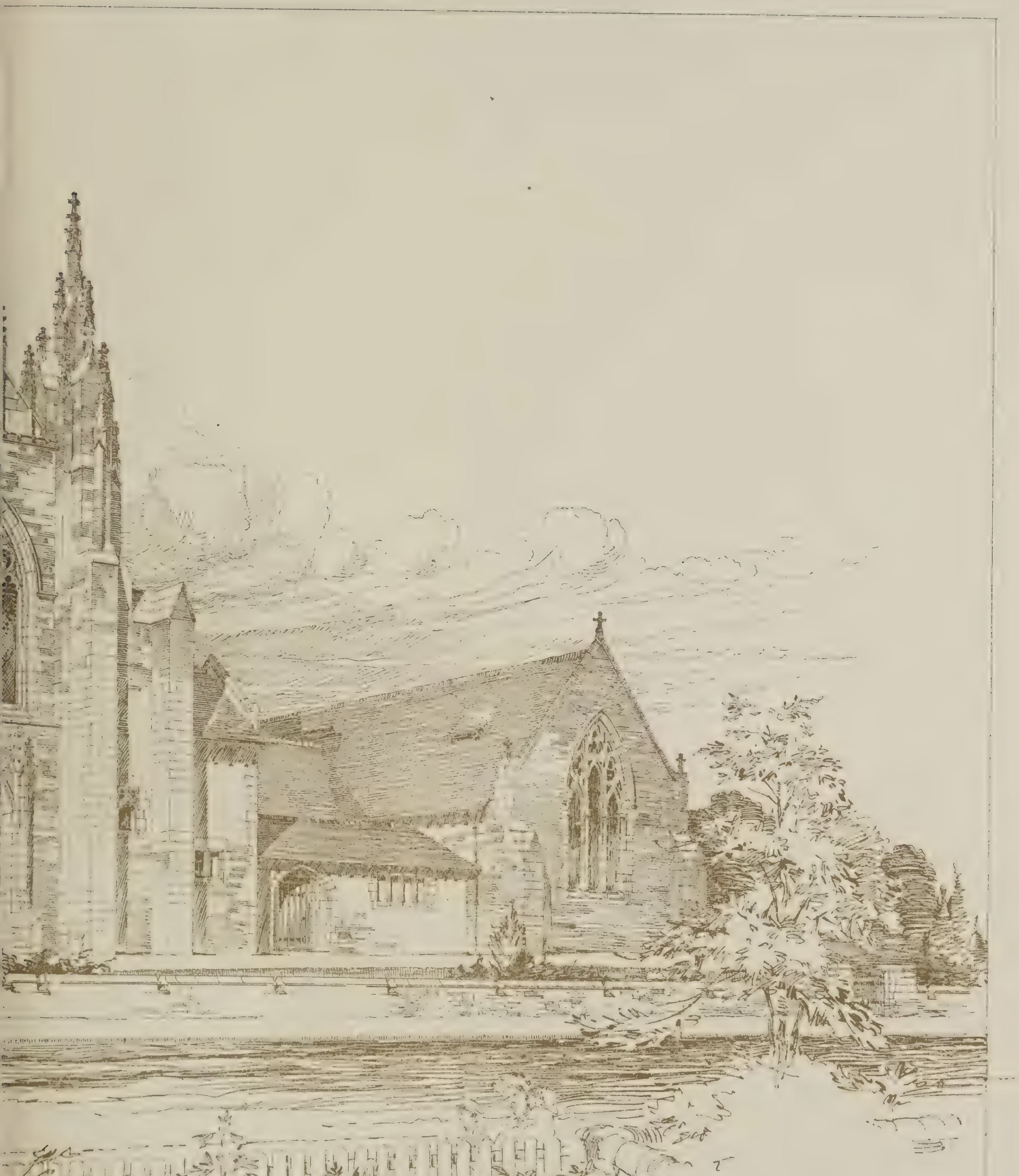

"PHOTO-LITHO." R. J. EVERETT & SONS, 56 LUDGATE HILL, E.C.

CH. W. G. ROWAN, ARCHITECT.

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Law Cases.

Glasgow Building Regulations Act : Base- nents under Streets.—Some time ago Mr. R. V. Forsyth applied to the Dean of Guild for uthority to make alterations in his ware- ouse at the corner of Renfield Street and ordon Street, Glasgow, and in particular to nlarge the basement flat by building under enfield Lane to its centre, up to which his ight of property extends. Mr. Stuart Cran- tone, the proprietor on the opposite side of enfield Lane, consented. The Master of Vorks lodged objections on the ground (1) hat the consent of the Corporation was equired, under section 20 of the Building egulations Act, to any building under the ane (which is a private street within the neaning of the Police Acts); and (2), under ection 65, to the increase of the cubical xtent of the warehouse, which already ex- eeds the limit under the Act. The Dean of uild on June 23rd last repelled the objec- ions of the Master of Works and granted he lining. The Master of Works appealed o the Court of Session, and on March oth the Court gave its decision, upholding he Dean's decision on the first point—the ight to go under the lane without the Cor- oration's consent—but reversing it on the he second point, and refusing the lining ntil the consent of the Corporation was obained. No expenses were found due to either arty.—The Lord President in the course of is judgment said it did not appear under hat conditions the municipal authorities ere entitled to insist (if they could insist) on aying pipes or other things under a street, ut in so far as section 20 was concerned, it id not place an embargo upon the owner of round extending to the middle of the street om putting his property under the level of to all ordinary and lawful uses. As to the cond question, it was admitted that the fect of the operations proposed would be to dd 6,700 cub. ft. to the petitioner's building, as to make its total cubical extent about 96,700 cub. ft. It was thus clear that if the uilding which the petitioner desired autho- ty to erect were a new one he would first eed to obtain the consent of the Corpora- on, as his present building was nearly twice e cubical extent authorised by section 65. he petitioner argued that section 65 did not pply because it had reference to new struc- res, not to additions to existing buildings hich were already more than 350,000 cub. ft. extent. It was true that the section did ot in terms provide for a case like the esent, but the Lord President was disposed think that where the building already tended to more than 350,000 cub. ft. no dition to its cubical area or contents uld be made without the consent of the orporation.

Underpinning a House: Damages for ettlement.—At the Birmingham assizes on arch 23rd the case of *Higginbotham* v. *arsons and Martin* was heard. This was an tion for damages for trespass. The trespass leged consisted in the defendant erecting a use by the side of a house of the plaintiff's, derpinning the wall of plaintiff's house, d causing a serious settlement. For the aintiff, it was stated that he built four uses in Weatheroak Road, Sparkhill. e last of the series adjoined a piece of land ich the defendant acquired, and on which commenced to build a house: he came ht up to the plaintiff's house, dug down the purpose of making cellars, under- nned the wall, and caused it to settle and ck. The defence was that what had been ne was lawful and done in such a way at the plaintiff had no right to complain; at in building the house the defendent ployed a contractor; that there was no cessity and no expectation that the con- ctor would do underpinning; that the defendant received no intimation of it, and, therefore, the person liable was the contractor, and not the defendant.—Plaintiff's counsel pointed out that in the plans under which the contract was taken, underpinning was contemplated. He contended also that it was the duty of the defendant to see that the contractor whom he employed should not do any injury to the adjoining property. Evidence for the plaintiff was given to the effect that the underpinning was not properly carried out. Red bricks instead of blue bricks were used, and common mortar instead of cement; the three top courses were laid dry, and the top course was laid in brick ends for the plaintiff's footings to rest on. For the defence it was stated that there was no real necessity to underpin, but it was discovered that the plaintiff had trespassed by his footings about 4½in. on to their building land, and they had to do what was done in order to get a vertical line to build up to. If the plaintiff's property had not been there there would have been no necessity to underpin.—His Lordship said there was no doubt that the underpinning was badly done. He gave judgment for the plaintiff against Parsons for £35. The action against Martin would be dismissed.

Claim for Unsatisfactory Work.—In the King's Bench Division of the High Court judgment was recently given in an action by Mr. Stanley Broadbent, of Leicester, against Messrs. T. & W. Meadows, builders' contractors, of Heaton Norris, Stockport, claiming £200 odd, balance due for work done and goods supplied. His Lordship said it appeared that defendants had entered into a contract for the erection of some buildings at a sanatorium at Baguley, and they employed the plaintiffs as sub-contractors to do the slating and tiling work. The defendants said that the work which the plaintiffs had contracted to do was not completed to the satisfaction of the architect, and that if there was any money due to plaintiffs, which they denied, the sum of £105 was sufficient. The agreement between the parties was clear, that the plaintiffs were to be bound by the architect's certificate, and, therefore, on the legal rights the plaintiffs were only entitled to £105, though he regretted he could not give them more. Judgment, therefore, for the plaintiffs for that amount.

COMPETITIVE DESIGN FOR JUNIPER GREEN CHURCH. W. G. ROWAN, ARCHITECT.

The Ancient Church of Ickford, Bucks, is proposed to be restored.

A new Workhouse Infirmary for the West Ham Union has been opened at Leytonstone. It occupies a site of close upon 23 acres, has taken three years to build, and has cost £250,000 to build and furnish it. It accommodates nearly 700 patients. The staff will number over 200.

Keystones.

Safety of Roman Monuments.—Signor Nasi stated in the Italian senate last week that the monuments of the Palatine were not in danger; they only required a few minor repairs, which would be executed without delay.

Memorial to Journalists.—Mr. W. Goscomb John, A.R.A., has consented to become the art adviser of the Committee of the Institute of Journalists appointed to make arrangements for the memorial in St. Paul's Cathedral to war correspondents who lost their lives in South Africa.

A new Hotel in London, known as the "Kenilworth," has been erected at the corner of Great Russell Street and Bloomsbury Street. It has nearly 300 rooms and accommodation for over 350 persons. It is built with red-brick facings and Portland-stone dressings. The entrance porch is built in white and grey Italian granite.

A Night Refuge for Females has been erected in Watergate, Perth, from designs by Mr. David Smart. The contractors were:—Mason, Mr. Alexander Beveridge; joiner, Mr. M'Quibban; plumber, Messrs. Frew, Watson & Co.; plasterer, Mr. M'Ritchie; slater, Mr. Taylor; painter, Mr. Mackay; electric lighting and blinds, Mr. Campbell.

Buried Cities of Ceylon.—Mr. Edward Ames recently read at the Camera Club a paper dealing with the buried cities of Ceylon. In the year 1817 an Englishman was hunting big game in what he believed to be the primeval forests of Ceylon, when he was suddenly confronted with the evidence of a highly educated civilisation in the character of a ruined temple. Prior to that date the Singalese had preserved the secret of their former greatness from Europeans, although Moors and Portuguese must have known of the existence of these ancient cities long ere this. Since then, discoveries of great interest have been made, until to-day abundant evidence of great cities and magnificent buildings is presented, offering full proof of the authenticity of the ancient history of those cities, the records of which exist.

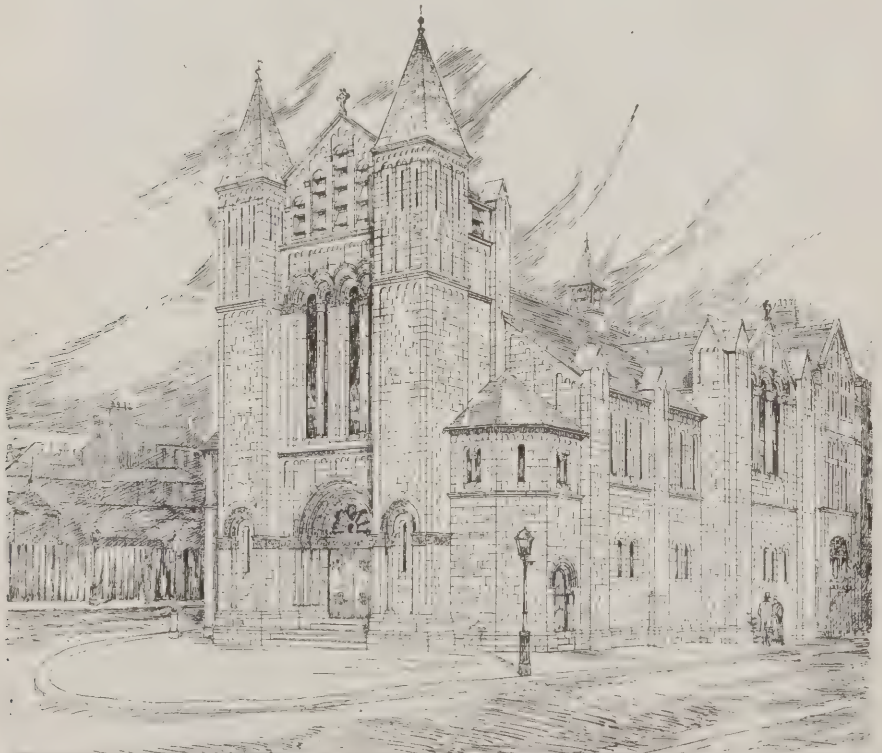
Shepherd's Hall, Chorley.—Twenty-two designs were received in this competition. Mr. Dyson, of Horwick, won the £10 premium.

Lady Sanitary Inspectors.—Kensington was the first public authority to appoint ladies to inspect workshops, and since then many others have followed their example. The credit of the reform belongs to Dr. T. Orme Dudfield, who still remains the medical officer of health for Kensington.

Supervision of House Design in South Kensington.—The Secretary to the Treasury in reply to a question in the House of Commons as to whether the Board of Works had any jurisdiction over the houses about to be built north of the footpath in Church Street, Kensington, so as to ensure architectural uniformity and good taste, said that the condition for letting provided for the erection of the houses according to designs to be approved by the Commissioners of Woods.

The Memorial to Lord Dufferin which is to be erected on the Donegal Square West site at the new City Hall in Dublin has been designed by Mr. F. W. Pomeroy, and will cost £5,000. The architectural setting of the figures will be in Portland stone on Classic lines, consisting of a canopy supported by four Ionic columns standing on a massive base showing four panel faces, on two of which will be seated bronze figures of India and Canada. Above the canopy will be a small dome on which a bronze figure of Fame will stand.

A new Presbyterian Church at Muswell Hill has been opened. It is Perpendicular Gothic in style, and is faced externally with whole white flints in combination with best pressed red facing bricks and red terra-cotta dressings. The interior is finished with sand-faced stucco. The seating is circular on plan, all radiating from the pulpit, which has a spacious platform in front of it. The architects are Messrs. George Baines, F.R.I.B.A., and R. Palmer Baines, 5, Clement's Inn, Strand, London, W.C. The builders were Messrs. W. Johnson & Co., Ltd., Belle Vue Road, Wandsworth Common, S.W.



THE WYND CHURCH, GLASGOW. MCKISSACK AND ROWAN, ARCHITECTS.

Mr. A. Edward Thompson, architect, of Withernsea, is preparing plans for the new riding school, stables, recreation-rooms, offices, &c., to be built at Hull for the East Riding Imperial Yeomanry.

A new Roman Catholic Church in the Mile End Road, E., has been erected from designs by Mr. Frederick A. Walters, F.S.A., of Westminster. It is in Gothic style, of red bricks with Ancaster stone dressings, &c.

A Church Competition.—The competition recently held for the Baptist Church, Beverley Road, Hull, has been decided in favour of designs submitted by Messrs. George Baines, F.R.I.B.A., and R. Palmer Baines, architects, 5, Clement's Inn, Strand, London, W.C.

In the Crypt of St. Paul's Cathedral, on one of the piers just west of the sarcophagus of the Duke of Wellington, there has been fixed a memorial tablet by Mr. J. N. Forsyth, the sculptor, in memory of the late Sir Samuel Browne, V.C. The memorial is of pure white marble, and is carved in low relief with a figure of a Punjaub cavalryman, who holds a scroll bearing an inscription. It is intended to set up a replica of the memorial in Lahore Cathedral.

Durban Municipal Buildings Competition.—Twenty-seven competitive designs have been received for the Durban Town Hall, Library, Museum and Art Gallery. Thirteen have been sent in from South African architects and fourteen from home competitors. Six are being selected by an assessor (Mr. W. E. Robarts, president of the Institute of Natal Architects), and the final competition will be limited to these. The premiums of £500 will be awarded for the first and £300 and £200 for the second and third, with £100 each to the other three competitors.

Competition Reform Society.—The committee of this Society disapproves of the existing conditions of the competition for a free library at Maidenhead because the Council retain to themselves the right to erect a building in accordance with any one of the three premiated designs they may select; also the clause as to cost is unsatisfactory. The Society, therefore, requests its members to abstain from competing unless they receive a further communication to the effect that the conditions have been satisfactorily revised.

The Church of St. Giles Without, Cripplegate, Fore Street, E.C., has been exposed by reason of the City Corporation, in widening the street, having recently pulled down the Quest House and four shops, of date about 1660, which stood in Fore Street between it and the north side of the church, and hid the church from view. The opportunity presents itself for acquiring the piece of land, which will otherwise be sold for building purposes. It is desirable that the whole of the north side of the church should remain open to the street, and that the north wall and windows, now blocked, should be suitably restored. The requisite outlay is about £9,000, towards which about £2,000 is promised.

Liverpool Architectural Society.—In the annual report for the past session, just issued, reference is made to the Liverpool Corporation and its competition for workmen's dwellings. The Council resents the setting aside of the designs submitted, in favour of the city surveyor's plans. Considerable attention has been given to the schedule of charges, originally published in 1870 and revised in 1890; it is hoped the edition now being published will prove useful and satisfactory. The honorary secretaries remind senior members that applications are constantly being made by draughtsmen wanting situations, though very few architects apply for the names of likely assistants. The present membership of the Society is 154. The statement of account shows a balance in hand of £36 2s. 2½d.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Buildings to Measure at Plymouth.

PLYMOUTH.—PROBATIONER writes: "Kindly mention any Early English or Decorated work in or near Plymouth suitable for measuring as a testimony of study for the R.I B.A. Intermediate Examination."

There is Early English work at Plymstock, Yealmpton and Buckfastleigh. The first two of these are close to Plymouth, and should both be visited for the purpose of selection.

G. A. T. M.

Sewage Treatment.

DORSET. — BACTERIA writes: "Kindly recommend a book giving the pros and cons of the treatment of sewage by the septic tank system."

See "Specification, No. 5," published at these offices, price 5s. nett.

R.I.B.A. Examinations.

SIDMOUTH.—DOWN SOUTH writes: "Where can I obtain the syllabus of the R.I.B.A. examinations; also, what books should I require for the preliminary examination?"

All the information you require is contained in the R.I.B.A. Kalendar, which can be obtained from No. 9, Conduit Street, W., price 2s. 6d.

The Architectural Association.

TWICKENHAM.—H. writes: "How might I join the Architectural Association?"

Communicate with the secretary, Mr. D. G. Driver, 56, Great Marlborough Street, W.

Quantity Surveying, Mensuration and Book-keeping.

QUANTITY writes: "(1) Have any articles on quantity surveying appeared in THE BUILDERS' JOURNAL? (2) Can you recommend any books for mensuration and book-keeping as required for the Surveyors' Institution examinations?"

(1) No. See the notes on the preparation of bills of quantities in "Specification, No. 6." (2) Hunter's "Self-Instruction in Book-keeping" and "Progressive Exercises," price 2s. and 1s. 6d. respectively (Longmans & Co.); Stevens's "Elementary Mensuration," 3s. 6d. (Macmillan & Co., Ltd.).

Classic and Mediaeval Ornament.

HULL.—A. G. writes: "Can I obtain large plates of Mediæval and Classic ornament suitable to draw out for the R.I.B.A. Intermediate Examination?"

For Classic ornament see Spiers's "Orders" and H. D'Espouy's "Classic Ornament"; for Gothic see A. Pugin's "Specimens; Examples; Normandy" and J. K. Colling's "Details."

Books on Water Towers.

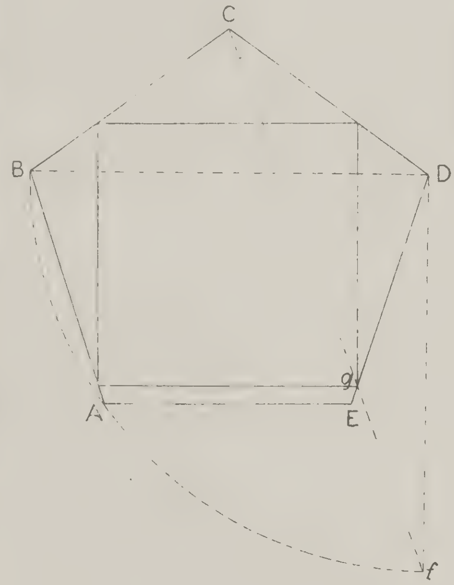
LONDON, N.W.—B. E. A. writes: "Are there any books on the construction of water towers?"

"The Water Supply of Towns and the Construction of Waterworks," a practical treatise for the use of engineers and students of engineering, by W. K. Burton, A.M.I.C.E., Professor of Sanitary Engineering in the Imperial University, Tokyo, Japan, and Consulting Engineer to the Tokyo Waterworks (price 21s., post free); "Towers and Tanks for Waterworks," the theory and practice of their design and construction, by J. N. Hazlehurst, Member of the American Society of Civil Engineers (price 10s. 6d. nett, post free); "Waterworks Distribution," a practical guide to the laying-out of systems of distributing mains for the supply of water to cities and towns, by J. A. McPherson, A.M.I.C.E. (price 6s. nett). These books can be obtained from Mr. B. T. Batsford, 94, High Holborn, W.C.

Examination in Elementary Mathematics.

SHEFFIELD.—A. F. F. writes: "Which are the best books for the geometrical portion of the Board of Education's examinations in elementary mathematics (Honours, Part I.)? The syllabus requires problems in pure geometry, and those also which require the application of algebra or trigonometry. Could you spare room for a solution of the following question (from a recent paper)?—Show how to construct a square so that its vertices shall lie on four of the sides of a regular pentagon."

The best book for the geometrical portion of this examination is probably Casey's "Sequel to Euclid" (Dublin University Press). The construction of the problem submitted is shown by the accompanying sketch. Draw the given regular pentagon A B C D E, whose sides are 1·176 times the radius of circumscribed circle; join B D and set up D*f* at right angles and equal to B D; join C*f* crossing E D at *g*, which will be one vertex of the square required.



HENRY ADAMS.

S.K. Examinations in Building Construction.

HERNE BAY.—S. H. H. writes: "What is the date of the next examination in building construction under the Science and Art Department, South Kensington, and which is the nearest centre to here?"

The examination in building construction will be on Saturday, May 9th next, from 6 p.m. to 10 p.m. It would appear from IX., page 23, "Supplementary Regulations for Secondary Day Schools and for Evening Classes" (price 4d.), that it is now too late to make application. Application for examination should have been made to "the special local secretary (where one has been appointed) or to the correspondent of the managers of a school where examinations are to be held, by March 18th for admission to the evening and by April 28th for admission to the day examinations." There is no day examination in building construction. If it is intended to have a school, to be recognized by the Board, at Herne Bay in time for 1904, steps should be taken to enable Form 125 being filled up and forwarded before September 30th (or other date which may be substituted for September 30th). We advise you to procure a copy of the "Regulations" quoted from above; it may be had from Messrs. Eyre & Spottiswoode, or through any bookseller. External candidates, such as your students, are charged a fee of 2s. 6d. each. Any secretary of an existing school in, say, Canterbury will explain in ten minutes' conversation the steps to be taken to set up a school which surely Herne Bay ought to have.

Building Surveyors.

CHAGFORD.—E. G. S. writes: "(1) Where can I obtain information about the examination for building surveyors? (2) Are the posts of sanitary and building surveyors generally combined? (3) What is the average salary of a building surveyor?"

(1) An examination for building surveyors to local authorities is held by the Royal Institute of British Architects, particulars of which are obtainable from the secretary, 9, Conduit Street, Hanover Square, W. It does not seem, however, to have any very great value, as exceedingly few surveyors think it worth their while to enter for it. Probably the entrance examination of the Incorporated Association of Municipal and County Engineers, 11, Victoria Street, S.W., would be more to the purpose. (2) In small places they are usually combined. In larger towns the borough surveyor often acts as building surveyor, and it is only in the largest cities that the building surveyor is a separate official. (3) This varies from a nominal fee to several hundred pounds a year, it being impossible to state an average.

G. A. T. M.

Obstruction of Light.

LANCASHIRE.—LEEP writes: "A friend of mine owns two dwelling-houses on a highway, and desires to know whether he can claim compensation from the adjoining church trustees for obstructing the light. The church was commenced about a year ago, and has so darkened the rooms of the adjoining houses that one of the tenants has given the landlord notice to quit. Has the owner of the property good grounds for a claim?"

This is a matter about which a local solicitor should be consulted, provided that the lights were in existence for nineteen years and a day before they were first interfered with. The fact that the tenant has given notice to quit (if this be genuine and not a mere arrangement) is evidence of damage; but the distance at which the church is erected is suggestive that the amount of light cut off cannot be great. A judge would probably want to know also why an injunction against the building was not sought at an earlier stage. The case is consequently a doubtful one, and the result would depend largely upon the judge before whom it was heard.

G. A. T. M.

Half-Timber Work.

RAINHAM.—STUDENT writes: "In building houses to represent the old black-and-white half-timber houses, should the timbers be framed and backed with 9in. brickwork or framed in thin oak and nailed to the face of the brickwork? What section should the oak framing be?"

Sham half-timber work is most reprehensible; if the wall is of bricks it will be stronger if built entirely of them. If the local by-laws allow real half-timber to be used with plaster panels, or in 4½in. brickwork, with vertical tiling on the front on battens or tiling alone, it has of course the advantage of cheapness. The oak looks best when left from the adze and should not be stained or coloured. The plaster filling is best flush with the face, though it is often left ½in. back from the face of the beams. For further information see "Specification, No. 6," a reply to an enquiry with illustration of a half-timber house in course of construction on p. 286 of our issue for June 14th, 1899, and an article by Mr. W. A. Melton which appeared in our issues for December 15th and 22nd, 1897.

MODERN LONDON BUILDINGS.

(*Continued from* p. 89, *No.* 424.)

Having received numerous enquiries on the subject, we thought it useful to have a list compiled of the principal buildings erected in London during the last twenty-five years. In compiling this list the Editors have met with much difficulty. The pages of this and other technical journals have been consulted and put largely under contribution, and our thanks are tendered to our contemporaries for the large amount of information which was thus obtained. Still, inaccuracies and omissions must be inevitable in such an undertaking, and we should be much obliged to any of our readers who would kindly write to us with corrections and additions. As far as it is possible to do so the buildings are dealt with in districts, and, as will be seen, are gathered together under the respective years when they were erected. The list of public and semi-public buildings in the E.C. district was published in our last issue.

E.C. DISTRICT: DOMESTIC BUILDINGS.

Building.	Architect.	Approximate Cost.	Remarks.
1876.		£	
No. 1, Poultry	J. & J. Belcher	—	
1878.			
Queen Anne Chambers, Holborn Viaduct.	W. Leckham Witherington.	—	The building is of red brick and Dumfries and Bath stone.
1884.			
Artisans' Dwellings, Brown's Estate, William Street, Blackfriars.	W. Hewson Lees	—	The dwellings are built of stock bricks, with red-brick cornices, strings, &c.
Vicarage House (of St. Bride's, Fleet Street), Bridewell Place.	Basil Champneys	—	The vicarage has a frontage of 44ft. and a height of 48ft. The style is a mixture of Elizabethan and Queen Anne. The facings are of red brick; gauged brickwork being used for carving and ornament.
1885.			
Artisans' Dwellings, Seward Street, St. Luke's.	Marshal N. Inman	33,125	The foundations of the buildings are carried down to a depth of 20ft. The buildings themselves consist of one-, two- and three-room tenements, which afford accommodation for about 1,500 persons.
City and Central Dwellings Co.'s Workmen's Dwellings, Seward Street, Goswell Road.	Marshal N. Inman	48,000	The building consists of eight blocks, each giving accommodation to about forty-eight families, or a total accommodation of nearly 1,400.
1898.			
Headmaster's House, Merchant Taylors' Schools, Rutland Place, Charterhouse Square.	W. Hilton Nash	—	The materials used for the house were Portland stone, Monk's Park stone and red bricks. The reception-rooms are on the ground floor, and there are nine bedrooms on the upper floors. The house communicates with the boys' dining- and luncheon-rooms.

E.C. DISTRICT: RELIGIOUS BUILDINGS.

Building.	Architect.	Approximate Cost.	Remarks.
1875.			
Church of the English Martyrs, Tower Hill.	Welby Pugin	10,000	The stonework is of Cooper Hill stone, except in the caps and bases, which are of yellow Mansfield stone, the columns being of Aberdeen red and Bessborough grey granite. The exterior is of Box Ground Bath stone and brick. The style is the English Gothic contemporary with Flamboyant.
1876.			
St. Mary Aldermary, Bow Lane, Queen Victoria Street (alterations).	Tress & Innes	12,000	
Welsh Chapel, Bridgewater Square, Barbican.	Charles Bell	5,000	Accommodation is provided on the ground floor and in galleries for 650 persons. The walls are of brick, with Kentish rag facings and Portland-stone dressings. The spire, 90ft. high, is slated, and the style is Early Gothic.
London Mission House, New Broad Street (additions).	E. C. Robins	12,000	The additions are in the Italian style, harmonizing with the existing buildings erected forty years earlier by Sir William Pite.
1879.			
St. Sepulchre's Church, Snow Hill (restoration).	Newman & Billing	15,000	
1880.			
Wesleyan Chapel, City Road (partly rebuilt).	Charles Bell	5,000	
1882.			
St. Clement's Church, Bath Street, City Road.	William Butterfield	—	The entire length of the church is 135ft., of which the chancel takes up 41ft., the width of both being 28ft. The walls are of grey stocks externally and red brick internally, with Bath-stone dressings.
Welsh Wesleyan Chapel, City Road.	Wilson, Son & Aldwinckle.	9,000	
1890.			
Billingsgate Christian Mission, St. Mary-at-Hill.	George Baines	4,025	The mission hall, on the first floor, is constructed to seat about 200 persons. A retiring-room leads into the hall, and over this room is a library with brick window at angle. The ground-floor and basement comprise two large rooms each 37ft. by 19ft., which are leased to the Postal authorities. The exterior is faced with red Bracknell bricks, with Ancaster-stone dressings, and red glazed brick pilasters to the ground-floor storey.
Mission Hall (for St. Paul's Church, Clerkenwell), 85, Goswell Road.	Henry Ough	—	The elevation is of red brick with terra-cotta dressings. The basement contains lavatories, stores and kitchens.
1891.			
St. Bartholomew-the-Great, Smithfield (new south transept).	Aston Webb	—	The external facing is of flint with Portland-stone dressings, and the internal facings are of Bath stone.
Mission House, Shoreditch, E.C.	R. J. Lovell	—	The house contains a mission hall and several rooms for classes, while a series of bathrooms for poor women and children are provided. Besides bedroom accommodation for the ladies in residence, there are a refectory and private rooms, and also a soup kitchen.
1903.			
The Leysian Mission Buildings, City Road. (In course of erection.)	Bradshaw & Gass	100,000	On the lower floors are complete suites of club rooms for working men, lads and girls, with a large gymnasium and drill hall for boys' brigade, &c. The small hall will seat about 600, and has a complete suite of twenty-five classrooms of various sizes attached to it. The roof of the small hall is a flat, to serve as an open-air preaching and concert garden. The great hall holds about 2,000 persons, in connection with which are various retiring-rooms. On the third and fourth floors are situated the Leysian and Moulton House settlements. On the upper floor is a small settlement for lady workers and accommodation for the missioner. On each side of the central entrance shops are arranged, each with basement storage. The first and second floors over the shops are formed into twenty-seven offices. Polished granite pilasters are used in the lower part, the whole of the upper part being of bright red terra-cotta. The buildings will be completed in 1904, the foundation-stone having been laid in 1901.

E.C. DISTRICT: COLLEGES AND SCHOOLS.

Building.	Architect.	Approximate Cost.	Remarks.
1875.		£	
Merchant Taylors' Schools, Charterhouse (extension).	Edward I'Anson	50,000	
St. Paul's Cathedral Choir School, Carter Lane.	F. C. Penrose	13,260	The school is 148ft. long by 40ft. wide, and is of brick with terra-cotta dressings, the spandrels, &c., being executed in sgraffitto ornament.
1879.			
Board School, Graystoke Place, Fetter Lane.	E. R. Robson	6,859	Accommodation is provided for 436 children.
1882.			
City of London School, Victoria Embankment.	Davis & Emanuel	76,000	The building has a frontage of 132ft. to the Embankment, and the main buildings occupy an area of 18,000ft., in addition to gymnasium and fives-courts. The classrooms are on the ground, first and second floors. The large dining-hall in the basement measures 50ft. by 32ft. by 16ft. high, and accommodates 600 scholars. The walls of the basement are lined with cream-glazed bricks. The entrance on the ground floor gives access to a vestibule 34ft. by 32ft. In the "teaching block" are eight classrooms, each 24ft. by 22ft., to hold forty boys. On the ground floor are masters' sitting-rooms. The great hall, 100ft. by 45ft., runs the whole length of the building on the ground floor towards the Embankment. The hall is 84ft. high to the ridge, which is surmounted by a flèche. On the second floor of the "teaching block" are laboratories, lecture-theatre, kitchens, &c., and a lecture hall 58ft. by 48ft. The façade is Renaissance in style, executed in Portland stone carved by Mr. Gilbert Seale.
1883.			
Birkbeck Institution, Bream's Buildings.	Fowler & Hill	—	The building is 80ft. high, and contains library, reading- and coffee-rooms, and a lecture-room 66ft. by 50ft., to seat 1,200 persons. The walls are of red brick, with stone dressings and mullioned windows.
Finsbury Technical College, Tabernacle Row, City Road.	E. N. Clifton	—	The building is of brickwork with stone dressings. The upper floors contain class- and lecture-rooms to accommodate 200 persons, and on the ground floor are laboratories.
1885.			
Guildhall School of Music, Victoria Embankment.	Sir Horace Jones	20,000	The building is Italian Renaissance in style, executed in Portland stone, and comprises four floors containing 42 classrooms. In the basement is a common-room for professors, refreshment-rooms, &c., while on the second floor is the practice-room, measuring 70ft. by 28ft.
1886.			
Finsbury and Shoreditch Polytechnic, Appold Street, Finsbury Square, E.C.	H. W. Dobb	8,000	The elevation of the building is in the Tudor style. In the basement are a swimming-bath and a gymnasium. On the ground floor are a concert-hall 66ft. by 40ft., games-room, drawing-room and refreshment-room. On the first floor are the workshops and classrooms, and a flat roof 120ft. by 70ft. gives space for open-air concerts, &c.
Zion College, Thames Embankment.	Sir A. W. Blomfield	26,000	The building, which is in the Perpendicular style, is 75ft. high, and has a 75ft. frontage to the Embankment and a return frontage of 134ft. On the ground floor is a hall 63ft. by 30ft., also a book- and court-room. On the upper floor is a library, whilst the mezzanine floor contains luncheon- and book-rooms.
1887.			
City of London College, White Street, Moorfields.	E. A. B. Crockett	16,000	The building is in the Gothic style, executed in red brick and Portland stone. The basement contains the great hall, 70ft. long by 40ft. wide and 27ft high. The ground floor contains the reading-room, 53ft. long by 20ft. wide, with a coffee-room adjoining, a library, office, board-room and principal classroom 44ft. by 20ft. On the other floors are more classrooms, including studios, laboratories, &c., giving total accommodation for about 400 students.
1891.			
Bishopsgate Girls' School, Bishopsgate.	T. Chatfeild Clarke	18,000	Accommodation is provided for 550 pupils, together with all the requirements of a middle-class girls' school. The materials used are Lawrence's red bricks with buff terra-cotta dressings. The architecture is based on the collegiate buildings of the Jacobean period.
1893.			
St. Bride Foundation Institute, Bride Lane.	- - - -	18,000	The building has a frontage of 107ft. with a return frontage of 34ft. and an average depth of 75ft. It consists of five floors, including the basement. The swimming bath, 75ft. by 27ft., and washing baths occupy part of the basement and ground floor. The remainder of the basement is taken up by book stores, laundry, lavatories, strong-rooms, &c. On the remaining portion of the ground floor are the library and gymnasium, 48ft. by 23ft. On the first floor is the executive department, board-room and offices, and a reading-room 50ft. by 27ft.; also a lithographic printing school of 1,500 sq. ft. area. On the mezzanine floor in front are the Passmore Edwards and Blades libraries, and the printing museum. On the floor above are the letterpress printing school, 70ft. by 33ft., a girls' reading-room and caretaker's apartments. The frontages are faced with red brickwork, with Portland stone and terra-cotta dressings. The floors are fireproof in construction, and the staircases are of stone.
Science School for the Merchant Taylors' Company, Charterhouse Square.	W. Hilton Nash	4,000	The ground floor contains classrooms and physical classrooms, and the upper floor contains a lofty laboratory with open-timber roof, storerooms, &c. The buildings are faced with red brick and Monk's Park stone bands and window dressings.
1894.			
Additional Wing, Central Foundation Schools, Cowper Street.	T. & H. Chatfeild Clarke.	3,500	This building is of three storeys, with one room on each floor. The ground floor is mostly left open for light and access to the basement, the front wall being supported on Portland-stone columns and arches. On this floor is a room suitable for an office. On the first and second floors are placed physical and chemical laboratories respectively. These are lofty rooms about 33ft. square; they are heated by hot water at a low pressure. The street elevation is of Suffolk bricks and Mansfield stone, with an arcade of Portland stone on the ground floor.
City of London School for Girls, Carmelite Street, Victoria Embankment.	Andrew Murray, City Surveyor.	16,000	In the basement, cloakrooms, lavatories and recreation-room are provided. On the ground floor are an entrance hall, lady-principal's room, secretary's office and two classrooms. The two floors above have five classrooms each, and the third floor has four classrooms. On the fourth floor is a luncheon-room, 70ft. by 28ft. 6in. and 16ft. high, with kitchen, &c. On the attic floor are rooms for the housekeeper. The buildings adjoin the Guildhall School of Music, and have a frontage of 71½ft. and a depth of 51½ft. Accommodation is provided for 250 girls. The elevation to the street is in Anglo-Italian style, the material used being Portland stone.
Mercers' Schools, Barnard's Inn, Holborn.	T Chatfeild Clarke	-	The area of the site is 27,000 ft. super. The old Inn Hall still stands and is incorporated in the school buildings, which are faced with red brick and Ancaster-stone dressings. There are two entrances to the main block, one of which is surmounted by a clock tower. The old hall is used as the dining-room, and kitchens, &c., have been built adjoining it; and the headmaster's room is near it. In the main block on the ground floor is the large assembly hall, 70ft. by 40ft. On the same floor are lecture-room, laboratory, &c. On the first and second floors are classrooms, six on each floor, warmed by low-pressure hot water. A separate building, facing Fetter Lane, contains the chemical laboratory and the drawing school. The buildings are fireproof throughout, and are lighted by electricity. The classrooms accommodate 300 boys. The lavatories form a separate building in the playground.
1897.			
Guildhall School of Music, Victoria Embankment (extension).	Andrew Murray, City Surveyor.	20,500	The building has a frontage to John Carpenter Street of 72ft. 6in. and a depth of 51ft. 6in., the area of the entire site being about 3,700ft. The accommodation provided consists of, on the ground-floor level an orchestral saloon 47ft. wide and 55ft. long, with a stage 47ft. wide by 13ft. deep. The height of the saloon is about 30ft., and it will accommodate 650 persons. On the second, third and fourth floors are thirty classrooms. The basement is occupied by dressing-rooms, &c. The floors are fire-resisting throughout. The elevation, which is 22ft. higher than the older buildings, is faced with Portland stone, rising from a granite plinth.
1898.			
Cripplegate Institute, Golden Lane.	Sidney R. J. Smith, together with F. Hammond.	30,000	The general facing of the building is Fareham brick, with Portland-stone dressings. It contains reading-rooms lending library, boys' room, concert hall, ward offices, committee-room, refreshment-rooms, technical instruction and classrooms, and residence for caretaker.
The Sir John Cass Technical Institute Jewry Street, Aldgate.	Arthur W. Cooksey	30,000	The basement provides for the various technical workshops, the physical laboratory, the lower part of the lecture-theatre and the necessary accommodation for the lighting and heating apparatus. Upon the ground floor is the large hall. The remainder of the floor provides rooms for the governors and secretary, the enquiry office, and the upper part of the lecture theatre. The first floor comprises the upper part of the large hall and classrooms. The second and third floors provide rooms for refreshments and social purposes, art and science schools, laundry and tailoring departments. The top floor consists of a large gymnasium, 74ft. by 36ft., and two playgrounds for the use of the school children. The building is of fireproof construction throughout, and is faced with red bricks and Portland stone.

Correspondence.

Architecture in Lancashire.

To the Editor of THE BUILDERS' JOURNAL.

SOUTHPORT.

SIR,—I had hoped that someone more competent than myself would have further replied to the enquiries concerning work worth measuring in Lancashire in your issue for February 25th.

In the issue for March 11th I was glad to see Mr. Eaton advising a visit to Middleton Church. May I advise "Vignola," of Southport, to visit the church at Halsall, four miles distant. There is plenty of work there that is worth measuring. The building is late Decorated and early Perpendicular, and there is a late Decorated doorway of great beauty between the chancel and the vestry which would be suitable for measurement as a R.I.B.A. testimony study. Indeed, to my own knowledge it has already on one occasion been so accepted. There is also a fine Decorated tomb on the north wall of the chancel. The church is always open.

Before going to Halsall "Vignola" might with advantage read the two articles on Halsall Church in vol. xii. (new series) of the Transactions of the Historic Society of Lancashire and Cheshire, which he will find in the Southport Reference Library.

While admitting that Lancashire is not well off as regards ecclesiastical architecture, I think it is going too far to represent the county as absolutely devoid of any architecture worth a student's while to measure, as "G. A. T. M." has lately on two occasions led your readers to believe. Lancashire churches are nearly all Perpendicular, and not the best of that, but in many of them there are particular features well worth more than a passing notice. In the "County Index" at the end of the seventh edition of Rickman's "Gothic Architecture" there is a list of twenty-one churches given as "good examples" in Lancashire. With the exception of the Norman Chapel of Stydd, near Ribchester, they are all Perpendicular.

As far as regards R.I.B.A. testimony studies, we may be situated in an unfortunate district, but there is plenty for students to measure if they will be content with something less than the best. "Vignola" might do worse than measure some of the old work at Ormskirk Church—the Norman arch in the north chancel wall, for instance, or the tombs in the Derby chapel. He could also find much to measure at Sefton Church, of which he will find a full account in Mr. Caröe's book on "Sefton." I should also suggest he turned over the pages of Canon Atkinson's edition of Glynne's "Notes on the Churches of Lancashire," issued in 1893 as vol. 27 (new series) of the Chetham Society's publications. Both these books he will find in the Southport Reference Library.

Manchester Cathedral and the Chetham Hospital are worth visiting. The early sixteenth-century stalls and the Derby chapel screen in the cathedral are particularly worth attention.

Mr. Eaton's article on Ordsall Hall, in your issue of January 21st, and that on "Some Lesser Lancashire Halls" on February 4th, should go to show that as regards domestic work Lancashire is not so poor architecturally as London and Oxford textbooks might lead one to suppose. It is very often quite as serviceable to a student to get to work on a small building and to study it thoroughly, even if it be a debased Perpendicular church or a Lesser Hall, as to turn him loose in a cathedral where he will be at a loss to know where to begin. At any rate, I feel strongly that students should not neglect what old work there is in their immediate neighbourhood merely because it is inferior to that further away.—Yours truly,

F. H. CHEETHAM.

Painting and Graining Oak Piers.

To the Editor of THE BUILDERS' JOURNAL.

EXETER.

SIR,—It was amusing to read on p. 76 of your issue for March 18th that an architect had directed a builder to paint and grain a couple of large oak gate piers: 9in. stuff (especially if it is English) is bound to open more or less when used out of doors, however long it may have been kept seasoning. But to putty up the shakes and paint and grain the whole is indeed alarming! The same thing was done to the window-frames of some shop fronts under the approach to St. Pancras Station. Passingly speaking, oak is *not* a desirable material for window-frames. Too often it shrinks or warps, and then good-bye to the glass! An instance occurred within my recollection at the church of St. Bartholomew at Lostwithiel in Cornwall, whose octagonal tower the late George E. Street, R.A., designated "the pre-eminent glory of Cornwall." It was, I think, in 1879 the late Joseph Clarke, F.S.A., when engaged in some necessary restoration to the general fabric, put in the framing of a fanlight over a doorway in oak. This was the actual work of a local builder. The "English" used was probably not over dry, with the inevitable result that it twisted, and as a matter of course the glazing cracked in every direction.

Painting and graining marble is only a step from similarly abusing our national wood. As all practical readers are aware, no marbles exposed to outdoor atmospheric influences retain their polish for many years in this country. I remember a building in Plymouth with large monolith columns of polished Devonshire marble on the façade. These looked remarkably well for a few years, but at length the gloss went off and the ambitious proprietor, thinking they were not showy enough, had them painted and grained, and so they stand to this day. Plymouth is one of our few towns that is practically paved with marble. The limestone is variegated, and after a shower of rain looks lovely. Kilkenny is also in some measure paved with its own marble. But the latter is black, and hence not nearly so noticeable.—Yours truly,

HARRY HEMS.

Obituary.

Mr. George Gill Ogg, of the firm of Messrs. G. Ogg & Son, builders, Bankhead, died recently at the age of twenty-four years.

The late Mr. William Holcroft, of Rufford & Co., Ltd., firebrick makers of Stourbridge, left an estate of the gross value of £277,215.

The late Mr. J. W. Drake, builder and contractor, of 123, Clapham Road, was buried last week. He was seventy-four years of age.

Mr. H. J. Boolds, architect, of Morpeth, died on March 12th at Embleton, where he had been living for the last few months. He began the practice of his profession in Morpeth in conjunction with Mr. William Hardy, of Morpeth. The partnership was not of long duration, as Mr. Hardy died in 1887. The original name of the firm, Messrs. Boolds & Hardy, was retained by the surviving partner. He did the extensive additions to Morpeth Grammar School for the accommodation of the science and art departments, the ground plan of the North Seaton Links Estate, Newbiggin-by-the-Sea, and the villas erected there. Also, the Post Office, Morpeth, the Miners' Theatre, Ashington; and numerous business premises.

A new Town Hall at Brading has been erected from plans by Mr. J. Newman, of Sandown.

Construction Notes.

Glass-cast Houses. A novelty is reported from California, namely, a house that "sparkles as if jewel-studded." The house is a wooden structure, and while the exterior is still wet with paint a mixture of sand and crushed fine-blown glass is thrown on, giving the effect of a cream sandstone forming which sparkles all over in the sun. The idea of using fine-blown glass alone for sanding on toys and small objects is an old one of course, but this adaptation is somewhat new. I should like, however, to hear of the state of that house after a year or two—how then for the sand facing? Perhaps in California the climate is drier and the atmosphere not filled with smoke, but do not let the experiment be tried in any form on this side of the seas.

Foundations. THE general principles that affect the design of foundations are simple, and yet are often neglected. The importance of this part of any structure is very great; local by-laws, of course, are so framed as to prevent cases of disaster, but the regulation width and depth of concrete footings by no means prevent settlements—as many architects seem to suppose and consequently do not take any precautions. Settlement occurs, more or less, in every building and precautions need to be taken to secure uniformity. The principles to be observed are two: distribution of the weight of the structure over a large area of bearing surface, and prevention of the escape of any of the supporting material laterally. In the former the two factors that need consideration are the resistance of the soil to compression and the superincumbent weight. Knowing these, the foundations can be varied in width so as to distribute the pressure equally, and when that is done the structure will of course settle uniformly. Upon an ordinary building site all the soil is of the same character, having the same resistance to pressure, and therefore the width of the foundation only needs to be varied according to the height of, or weights upon, the walls or piers. It occasionally happens, however (more often with a large building on an extensive site), that the subsoil or part of the site is of a different nature to that on another, and then the different resistances of these parts govern the width of the foundations as well. The usual foundations are a layer of concrete in a trench. The thickness of the layer is governed by the load it has to carry and its projection. When the load is very heavy and the ground soft (and the projection consequently wide) the thickness of concrete is saved by introducing something that will give the tensile strength required, such as steel joists or rods—or timbers may be placed under the footings. The depth of the excavated trenches will depend upon local features such as the nature of the soil, the depth to which frost penetrates, &c. The foundation bed should be horizontal unless the ground is rock, when it can be brought up in level stages by concreting. Before a large and important building is commenced, tests should be made of the resistance of the ground by loading unit areas with an equivalent weight to the structure. The second principle, of preventing the escape of the supporting material, is usually carried out by sheet-piling, with a subsoil of soft or constantly wet ground, but it comes into play in other circumstances, such as where a house is built on the side of a hill, which has to be cut in steps to give level foundations, it then being necessary to protect the soil from washing out, settling or sliding by reason of the rainwater flowing down the side of the hill. Piles are also included in this principle, being used where the escape or settlement of the subsoil cannot be prevented.

H. K. D.

FIRE INSPECTORS.

IN the course of the paper on laws, by laws and regulations for fire protection (Fothergill Prize Essay) which he read before the Society of Arts on March 11th, Mr. T. Brice Phillips quoted the following extract from the report of the Glasgow Fire Brigade for 1901:—

> Defective building construction still bulks largely in our list of causes of fires. This is an inheritance that will last for a long time. Improvement may be looked for in the stringency of the Building Regulations Act, and in the inspection and proper repair of all buildings damaged by fire from this cause. All fires arising from defective building construction are at once reported to the Master of Works, whose staff visit and instruct how restoration is to be safely carried out.

Fire inspectors, said Mr. Phillips, should be given some similar powers to those of surveyors or sanitary inspectors, and premises where fire had occurred should be brought under the operations either of special building by-laws, or it might be convenient by extending the meaning of the term "nuisances" to bring such premises under section 91 of the Public Health Act, 1875, so as to ensure that in reconstruction proper precautions are taken against a recurrence of fire. The larger boroughs should appoint their own fire inspectors, but other councils should be invested with power to unite for the purpose of such appointments. A similar power of combination by district councils is already contained in section 286 of the Public Health Act, 1875, as to the appointment of medical officers of health, and in any legislation upon the present subject the section might, with slight modification, be made applicable to the appointments now suggested. It is noticeable that a large proportion of fires are caused by defects in construction of fire-places and flues. A central statistical department could, with advantage, in such cases, keep records of whether such defects are in buildings which have come under the operation of building by-laws or not, whilst it would be the duty of fire inspectors to report on these defects and suggest remedies for the prevention of a recurrence of fires.

Coming Events.

Wednesday, April 1.

Architectural Association (Discussion Section).—Mr. A. M. Watson on "Some Unorthodox Views about Building," 7.30 p.m.

Institute of Sanitary Engineers, Ltd.—Special Council Meeting at 6 p.m.

Society of Arts.—Mr. A. C. Eborall on "Application of Polyphase Motors to the Electrical Driving of Workshops and Factories," 8 p.m.

Royal Archæological Institute.—Mr. C. E. Keyser, M.A., F.S.A., on "Swalcliffe Church, Oxfordshire." Mr. R. Garraway Rice, F.S.A., on "An Illuminated Pedigree of the De Ferrers Family made in 1612," 4 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary Meeting at 8 p.m.

Edinburgh Architectural Association.—Mr. Frank Caws, F.R.I.B.A., on "A Plain Talk on Fire-proof Floors and Construction," 8 p.m.

Thursday, April 2.

Society of Antiquaries of London.—Meeting at 8.30 p m.

Chemical Society.—Meeting at 8 p.m.

London Master Builders' Association.—Meeting of General Purposes Committee at 4 p.m.

Civil and Mechanical Engineers' Society.—Mr. Gilbert on "Design and Testing of Centrifugal Fans," 8 p.m.

Friday, April 3.

Art Workers' Guild.—Paper on "Scene Painting," 8 p.m.

Glasgow and West of Scotland Technical College Architectural Craftsmen's Society.—Business Meeting at 8 p.m.

Institution of Junior Engineers —Mr. William Paterson on "Greasy Condensation Water as Boiler Feed." Mr. H. E. Yarrow on "Evaporative Trials of one of the Water Tube Boilers for Chilian Ironclad 'Libertad'," 8 p.m.

Architectural Association.—Mr. Banister F. Fletcher on "Palladio," 7.30 p.m.

Institution of Civil Engineers. - Students' Visit to the New River Company's Reservoirs and Pumping Statoon in course of construction at Kempton Park, at 3.30 p.m.

Saturday, April 4.

British Institute of Certified Carpenters.—Meeting at Carpenters' Hall at 6 p.m. Mr. W. Middleton on "Arches and Centering."

Glasgow and West of Scotland Technical College Scientific Society.—Annual general meeting at 7.30 p m.

Monday, April 6.

Society of Engineers.—Mr. Robert J. Thomas, M.I.C E., on "Road Maintenance and Administration," 7.30 p.m.

Liverpool Architectural Society.—Annual General Meeting. President's Closing Address by Mr. John Woolfall.

Tuesday, April 7.

Glasgow Architectural Association. — Mr. F. H. Newbury on "Ideals," 8 p.m.

Wednesday, April 8.

The Edinburgh Architectural Association (Associates' Meeting). Mr. J. D. Traill on "Woodwork of Louis XIV., XV. and XVI," 8 p m.

The Japan Society.—Mr. M. Tomkinson on "A Gossip on Japanese Art," 8.30 p.m.

Bankruptcies.

[Abbreviations: R O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver.]

During the week ending March 28th thirteen failures in the building and timber trades in England and Wales were gazetted.

J. Ashby, builder, Lowestoft. R.O. March 17th

E. Lawrence, builder, Leicester. Discharge suspended for two years, March 20th.

A. Neesom, builder, 19, Cartwright Road, Chorlton-cum-Hardy. R.O. made on a creditor's petition.

King & Wilkins, builders, Sherbrook Road, Fulham, S.W. P.E. Bankruptcy Court, May 1st, at 12.

G. Beckworth, builder, Whitwick, Leics. R.O. March 16th.

C. H. Cannon, builder, 29, Connaught Road, Ealing, W. R.O. March 20th.

F. Merredew, joinery manufacturer. Kingston-on-Thames. R.O. March 17th.

N. W. K. Godard, builder, Aldrington, Sussex. R.O. March 21st.

J. Atkinson, builder, Rodley, Leeds. P.E. Leeds C C. April 21st, at 11.

F. E. Nicholson, varnish maker, Hull. R.O. March 16th.

J. W. Radnedge, builder, Merthyr Tydfil. R.O. March 17th.

A. L. Luke, builder, Caversham. Liabilities £402; assets £247: deficiency £154.

C. Cooper & Co., stone merchants, King William Street, London, E.C. R.O. March 23rd. First meeting of creditors April 7th, at 11.

R. Roughton, builder, Wisbech St. Peter, Cambs. First meeting King's Lynn C.C. April 23rd, at 10.30. P.E. same day at 11.

G. A. Waters, builders' merchant. Dover. First meeting, O.R.'s, Canterbury, April 2nd, at 9.30. P.E. same day at 10.

E. Skilter, lately builder, Beaconsfield Road, South Tottenham, London, N. R.O. March 18th. First meeting, Bankruptcy Court, April 2nd, at 11. P.E. April 28th at 12.

S. Cooper, builder, Kingston-on-Thames and Hampton Wick. R.O. March 10th. First meeting, 24, Railway Approach, London Bridge, April 3rd, at 11.30. P.E. Kingston C.C. May 5th, at 2 30.

T. Banbury, builder, 21, Warwick Street, Rugby. Liabilities £1,729; £1,697 expected to rank for dividend; deficiency £1,219. R O. March 14th. P.E. Coventry, April 20th, at 2.30.

W. Ball, builder, Cheadle. Gross liabilities £7,386; £2,845 expected to rank for dividend; deficiency £1,086. Failure attributed to losses in building property. Adjourned P.E. held at Stoke-on-Trent on March 24th and closed.

Cadman & Son, shop-front builders and fitters, Hampstead Road, N.W. P.E. concluded March 25th The turnover for the last sixteen months of the trading was between £34,000 and £35,000, as against £41,790 for the year ended August 31st, 1901. Failure was attributed to keenness of competition and to loss on trading, stated at £5,559 since September, 1899.

New Companies.

The Sligo Sawmills and Joinery Co., Ltd., Georges Street, Sligo. Capital: £10,000 in £1 shares.

Robert Corry, Ltd., builders and contractors, University Street, Belfast. Capital: £20,000 in £1 shares.

The Carlingford Granite Co., Ltd., Carlingford, co. Louth. Capital: £5,000 in £1 shares.

J. W. Dean, Ltd., builders and contractors, 84, Paxton Road, Chiswick. Capital: £3.000 in £1 shares.

Currall, Lewis & Martin, Ltd., builders and contractors, &c, 333, Icknield Port Road, Birmingham. Capital· £30,000 in £1 shares (10,000 preference).

Bramley, Sons & Co., Ltd., dealers in ironmongery, turnery, &c., 46, Granby Street, Leicester. Capital: £15,000 in £1 shares.

Foster, Sons & Co., Ltd., slaters, plasterers, painters, decorators, plumbers, &c.. 24, Station Road, Padiham. Capital: £4,000 in £1 shares.

Home Counties Land Co., Ltd. Capital: £5,000 in £1 shares.

Park Lane Foundry, Ltd., mechanical, sanitary and general engineers, &c., Park Lane East, Dudley Port Capital: £10,000 in £1 shares.

John Crombie & Son, Ltd., manufacturers of annealed slag, concrete flags, ground brick and slag, artificial stone, &c., Cleveland Slag and Concrete Works, West Marsh, Middlesbrough. Capital: £20,000 in £1 share (10,000 preference).

Current Market Prices.

FORAGE.

		£	s.	d.	£	s.	d
Beans	per qr.	1	9	9	1	12	3
Clover, best	per load	4	7	6	4	15	0
Hay, best	do.	3	15	0	5	10	0
Sainfoin mixture ..	do.	3	15	0	4	5	0
Straw	do.	1	8	0	1	18	0

OILS AND PAINTS.

		£	s.	d.	£	s.	d
Castor Oil, French ..	per cwt.	1	1	0	1	2	2
Colza Oil, English ..	do.	1	3	0		—	
Copperas	per ton	2	2	6		—	
Lard Oil	per cwt.	2	13	0	2	14	0
Lead, white, ground, carbonate	do.	1	4	10		—	
Do. red	do.	1	0	4½			
Linseed Oil, barrels ..	do.	1	4	3		—	
Petroleum, American ..	per gal.	0	0	5¼	0	0	5⅜
Do. Russian .	do.	0	0	4⅛	0	0	4¼
Pitch	per barrel	0	7	0		—	
Shellac, orange	per cwt.	5	17	0		—	
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Home Melt ..	per cwt.	1	10	3	1	11	0
Tar, Stockholm	per barrel	1	1	6		—	
Turpentine	per cwt.	2	4	7½		—	

METALS.

		£	s.	d.	£	s.	d
Copper, sheet, strong ..	per ton	78	0	0		—	
Iron, Staffs., bar.. ..	do.	6	5	0	8	10	0
Do. Galvanised Corrugated sheet ..	do.	11	10	0	11	15	0
Lead, pig, Soft Foreign..	do.	13	2	6	13	3	9
Do. do. English common brands	do.	13	7	6		—	
Do. sheet, English 3lb. per sq. ft. and upwards	per ton	14	10	0		—	
Do. pipe	do.	15	0	0		—	
Nails, cut clasp, 3in. to 6in.	do.	9	5	0		—	
Do. floor brads.. ..	do.	9	0	0		—	
Steel, Staffs., Girders and Angles	do.	5	15	0	6	7	6
Do. do. Mild bars ..	do.	6	12	6	7	2	6
Tin, Foreign	do.	138	0	0	138	10	0
Do. English ingots ..	do.	139	10	0	140	10	0
Zinc, sheets, Silesian ..	do	24	0	0		—	
Do. do. Vieille Montaigne	do.	24	10	0		—	
Do. Spelter	do.	23	2	6	23	7	6

TIMBER.

Soft Woods.

		£	s.	d.	£	s.	d
Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow ..	do.	5	5	0	6	5	0
Do. Pitch	do.	3	0	0	3	4	0
Laths, log, Dantzic ..	per fath.	4	10	0	5	10	0
Do. Petersburg ..	do.	7	5	0		—	
Deals, Archangel, White—2nd, 3×9 ..	per P.Std.	10	15	0		—	
Do. Riga	do.	6	15	0	12	10	0
Do. Petersburg 1st Yellow, 3×11	do.	20	5	0		—	
Do. Sandarne, 3rd Yellow, 3×9	do	16	5	0		—	
Do. do. 5th do. 2½×9	do.	11	0	0		—	
Do. Gefle, Yellow,—1st & 2nd, 3×9	do.	15	15	0		—	
Do. do. do. 2½×9	do.	14	0	0		—	
Do. do. 3rd 4×9	do.	13	15	0		—	
Do do. do. 3×8	do.	8	15	0		—	
Do. do. 4th 4×9	do.	11	5	0		—	
Do. do. do. 3×9	do.	11	0	0		—	
Do. do. 5th 4×9	do.	10	0	0		—	
Do. do. do. 3×9	do.	9	15	0		--	
Do. Asbacka, inferior,—5th Yellow 3×9	do.	8	15	0		—	
Do. Lewisport, Yellow Pine—1st 3×11 to 15	do.	21	15	0		--	
Do. do. do. 3×9	do.	19	5	0		—	
Do. do do. 3×8	do.	18	5	0		—	
Do. do. do. 3×7	do.	18	0	0		—	
Do do. 2nd 3×11	do.	14	5	0		—	
Do. do. do. 3×9	do.	11	15	0		—	
Do. do. do. 3×8	do.	10	5	0		—	
Do. do. do. 3×7	do.	10	0	0		—	
Do. Halifax, unsorted Hemlock Spruce, 1st, 4×9	do.	8	5	0		—	
Do. Montreal, 2nd Red Pine, 3×9	do.	12	10	0		—	
Do. Montreal, Spruce, 2nd 3×9×12ft.	do.	10	5	0		—	
Battens, all kinds ..	do.	6	10	0	12	0	0
Flooring Boards 1in. prepared, 1st	per square	0	7	9	0	12	0
Do. 2nd	do.	0	8	3	0	10	3
Do. 3rd &c.	do.	0	7	6	0	9	6

Hard Woods.

		£	s.	d.	£	s.	d
Ash, Quebec	per load	3	12	6		—	
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	15	0	0	20	0	0
Cedar, Cuba	per ft. sup.	0	0	5¼		—	
Do. Honduras ..	do.	0	0	$4\frac{15}{16}$		—	
Do. Tobasco	do.	0	0	$4\frac{13}{32}$		—	
Elm, Quebec	per load	4	0	0	5	2	6
Mahogany, Average Price for Cargo, Honduras ..	per ft. sup.	0	0	$6\frac{9}{32}$		—	
Do. African ..	do.	0	0	$4\frac{29}{32}$		—	
Do. St. Domingo	do.	0	0	3¼	0	0	6
Do. Tobasco ..	do.	0	0	$4\frac{21}{32}$		—	
Do. Cuba ..	do.	0	0	$10\frac{19}{32}$		—	
Do. Lagos ..	do.	0	0	$4\frac{25}{32}$		—	
Oak, Dantzic and Memel	per load	3	5	0	3	15	0
Do. Quebec	do.	6	5	0		10	0
Teak Rangoon, planks..	do.	16	0	0	17	10	0

Complete List of Contracts Open.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	BUILDING:		
April 2	London, S.E.—Underground Convenience	Lambeth Borough Council	H. Edwards, Borough Engineer, Lambeth Town Hall, Kennington Green, S.E.
,, 2	London, S.E.—Alterations, &c.	Southwark Union Guardians	G. D. Stevenson, 13 and 14 King Street, Cheapside, E.C.
,, 2	Brierley, Barnsley—Stabling, Clubroom, &c.	——	R. & W. Dixon, 5 Eastgate, Barnsley.
,, 2	Bridlington—Alterations, &c.	F. J. Medforth	S. Dyer, 29 Quay Road, Bridlington.
,, 2	Castleford—Two Urinals	Urban District Council	W. Green, Surveyor, Council Offices, Castleford.
,, 2	Cudworth, near Barnsley—Stabling, &c.	——	R. & W. Dixon, 5 Eastgate, Barnsley.
,, 2	Gillingham, Kent—Wall	Urban District Council	F. C. Boucher, Clerk, Council Offices, New Brompton.
,, 2	London, N.W.—Boundary Wall, &c., at Cemetery	Hampstead Borough Council	O. E. Winter, Borough Engineer, Town Hall, Haverstock Hill.
,, 2	Langport—Policeman's Dwelling and Two Cells, &c.	——	W. J. Willcox, 1 Belmont, Bath.
,, 2	Skilling Farm, Bridport—Slaughter-House, &c.	Hansford & Son	Hansford & Son, Butchers, Bridport.
,, 3	Aberavon—Additions, &c., to Chapel	——	J. H. Phillips, Architect, Clive Chambers, Windsor Place, Cardiff.
,, 3	Alnwick—Two Blocks of Workmen's Houses	Urban District Council	G. Wilson, Town Surveyor, Council Offices, Green Bat.
,, 3	Egremont, Cumberland—Harness Room	Industrial Co-op. Soc., Ltd.	Society's Office, Main Street, Egremont.
,, 3	Esh Winning, Durham—House	——	H. T. Gradon, 22 Market Place, Durham.
,, 3	Halifax—Rebuilding Warehouse	——	J. F. Walsh & G. Nicholas, Architects, Museum Chambers, Halifax.
,, 3	Leicester—Bridge Widening Works	Tramways Committee	E. G. Mawbey, Borough Engineer, Town Hall, Leicester.
,, 3	Waun-Llwyd—Twenty-one Houses	Park Building Club	O. Newcombe, Architect, Ebbw Vale.
,, 3	Barking, Essex—Bridge, &c.	County Council	P. J. Sheldon, Chief Surveyor, County Offices, Chelmsford.
,, 3	Cross Houses, near Shrewsbury—Nurses Home, Fire-escape, Staircases.	Atcham Union Guardians	A. B. Deakin, Architect, Pride Hill, Shrewsbury.
,, 3	Ilford and East Ham—Bridge	Essex County Council	P. J. Sheldon, Chief Surveyor, County Offices, Chelmsford.
,, 3	Morpeth—Police Station	Standing Joint Committee	J. A. Bean, County Surveyor, The Moothall, Newcastle-upon-Tyne.
,, 4	Musselburgh, near Edinburgh—Church	Rev. P. M'Gettigan	A. E. Purdie, Architect, Meadow Grange, Bleasa, near Canterbury.
,, 4	Ecclesall—Bakery	Industrial & Provident Soc. Ltd.	H. L. Paterson, 19 St. James's Street, Sheffield.
,, 4	Llangawsai—House	J. E. Evans	J. A. Jones, 7 Queen's Terrace, Aberystwyth.
,, 4	Caergog, Aberystwyth—Two Houses	Capt. T. Hughes and Capt. D. Jones.	J. A. Jones, 7 Queen's Terrace, Aberystwyth.
,, 5	Swansea—Two Playsheds	Rhyndwychydach School Bd.	C. S. Thomas, 63 Wind Street, Swansea.
,, 6	Guildford—Flood Gates, &c.	Town Council	C. G. Mason, Borough Surveyor, Tuns Gate, Guildford.
,, 6	Cowes—Buildings at Waterworks Pumping Station	Urban District Council	J. W. Webster, Engineer, High Street, Cowes.
,, 6	Lelant—Three Houses	J. P. Uren	H. Maddern, 27 Clarence Street, Penzance.
,, 6	Ynyshir—School Buildings	Ystradyfodwg School Board	J. Rees, Architect, Hillside Cottage, Pentre.
,, 6	Dowlais, Wales—Extension, &c., of Stores	Workmen's Co-op. Soc., Ltd.	President, Society's Offices, Dowlais.
,, 6	Keighley—Residence	——	W. H. & A. Sugden, Architects, North Street, Keighley.
,, 6	Lichfield—Eight Houses	Municipal Charities	W. Perry, 39-41 Bore Street, Lichfield.
,, 6	Nelson, Wales—Twenty Houses	Wern Building Club	G. Kenshole, Architect, Bargoed.
,, 6	Newcastle-upon-Tyne—Underground Convenience	Corporation	City Engineer, Town Hall, Newcastle.
,, 6	Sleights, near Whitby—Semi-detached Villas	C. Smith	A. P. Stanton, Architect, Glaisdale, Grosmont, Yorks.
,, 6	Sunderlandwick, near Driffield—Brick and Iron Girder Bridge.	East Riding County Council	A. Beaumont, County Surveyor, County Hall, Beverley.
,, 7	Hampton, Middlesex—Hospital	Urban District Council	S. H. Chambers, Surveyor, Council Offices, Hampton.
,, 7	London, E.—Workmen's Dwellings	Stepney Borough Council	W. M. Jameson, 15 Great Alie Street, Whitechapel, E.
,, 7	Southampton—Public Convenience	Corporation	Borough Engineer, Municipal Offices, Southampton.
,, 7	Halifax—Additions to Confectionery Works	J. Mackintosh & Co., Ltd.	M. Hall, 1 Harrison Road, Halifax.
,, 7	Lydd—Repairs of Church Roof and Tower	——	Rev. A. Hardy, Lydd.
,, 7	Belfast—Home for Boys	Sisters of Nazareth	J. J. M'Donnell, 27 Chichester Street, Belfast.
,, 8	Bentham—Chapel	——	J. F. Curwen, 26 Highgate, Kendal.
,, 8	King's Langley, Herts—Home	Metropolitan Asylums Board	Newman & Newman, 31 Tooley Street, London Bridge, S.E.
,, 8	London S.W.—Shed	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
,, 8	Kells, co. Meath—Post Office	——	H. Williams, Secretary, Office of Public Works, Dublin.
,, 9	Huddersfield—Four Shops	Industrial Soc., Ltd.	J. Berry, 3 Market Place, Huddersfield.
,, 9	Pleasley, near Mansfield—School	School Board	J. Perkin, Architect, Main Street, Shirebrook.
,, 9	Stockport—Convenience	General Purposes Committee	J. Atkinson, Borough Surveyor, St. Petersgate, Stockport.
,, 9	Stranraer, Scotland—Gasholder Tank	Gaslight Co.	Manager, Works, Harbor Street, Stranraer.
,, 9	Aberbeeg—Twenty Cottages	No. 2 Building Club	G. C. Hilliard, Architect, Market Chambers., Llanhilleth.
,, 9	Slough—School Buildings	School Board	Lee & Farr, Architects, Slough.
,, 11	Blaengarw, Wales—Church Extension and Alteration	——	J. M. Jones, 54 King Edward Street, Blaengarw.
,, 11	Londonderry—Cottages	Rural District Council	J. J. S. Barnhill, 1A Strand, Londonderry.
	ENGINEERING		
April 2	Sunderland—Machine Tools	Corporation	J. F. C. Sneli, Borough Electrical Engineer, Town Hall, Sunderland.
,, 2	Heaton Mersey—Pumping Station	Heaton Norris Urban District Council.	W. Banks, Surveyor, Council Offices, Heaton Moor.
,, 2	St. Anne's-on-Sea—Steam Piping, &c.	Urban District Council	J. H. Clothier, Engineer, Electricity Works, St. Anne's-on-Sea.
,, 3	Leek—Electric Lighting Plant	Urban District Council	Burstall & Monkhouse, 14 Old Queen Street, Westminster, S.W.
,, 3	Leicester—Girders, Flooring Plates, &c., for Bridge	Tramways Committee	E. G. Mawbey, Borough Surveyor, Town Hall, Leicester.
,, 4	Rugby—Pumping Engine, Boiler, &c.	Urban District Council	D. G. Macdonald, Surveyor, Rugby.
,, 4	Wath-upon-Dearne, Yorks—Water Mains	Urban District Council	H. C. Poole, Water Engineer, Town Hall, Wath-upon-Dearne.
,, 6	Aberayron, Wales—Railway Extension	Vale of Rheidol Light Rlwy Co.	Sir J. & W. Szlumper, 17 Victoria Street, Westminster.
,, 8	London, N.—Water Storage Tanks	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
,, 8	Matlock—Purifiers, Steel Roof, &c.	Gas Co., Ltd.	Manager, Gasworks, Matlock.
,, 8	Bristol—Electrical Plant	Electrical Committee	H. F. Proctor, City Electrical Engineer, Temple Back, Bristol.
,, 8	Lowestoft—Tramways Plant	Corporation	W. C. C. Hawtayne, 9 Queen Street Place, E.C.
,, 8	Oswestry—Removing Weeds, &c.	——	M. B. Lawford, Clerk, Upper Brook Street, Oswestry.
,, 9	Colwyn Bay—Foreshore Improvements	Urban District Council	W. Jones, Engineer, Council Offices, Colwyn Bay, North Wales.
,, 9	Spezia, Naples, Venice and Taranto—Electrical Cables and Wire.	Italian Navy	Directorate-General of Royal Arsenals at Spezia.
,, 9	Aldershot—Electrical Plant	Urban District Council	Engineer, 126 Victoria Road, Aldershot.
,, 10	Belfast—Boiler	Gas and Electrical Committee	V. A. H. M'Cowen, City Electrical Engineer, East Bridge Street, Belfast.
,, 11	Bollington, near Macclesfield—Reservoir	Urban District Council	W. H. Radford, Engineer, Albion Chambers, King St., Nottingham.
,, 11	London, N.—Electrical Plant	Finchley Urban District Council	E. Calvert, Council's Electrical Engineer, Broadway, Finchley.
,, 13	Edinburgh—Carbons, Cast-iron Pavement Boxes, &c.	City Council	Resident Engineer, 5 Dewar Place, Edinburgh.
,, 14	Burnham, Somerset—Gas Plant	Gas Co.	J. H. Cornish, Gasworks, Bridport, Dorset.
,, 15	Kinsale, Ireland—Repairing Reservoir	Rural District Council	R. Evans, 53 South Mall, Cork.
,, 15	Templemore, Ireland—Waterworks	Urban District Council	Moynham & Gill, Engineers, Nenagh.
,, 16	Barrow-in-Furness—Waterworks	Corporation	A. H. Strongitharm, Engineer, Ramsden Sq., Barrow-in-Furness.
,, 17	Croydon—Destructor Furnaces, &c.	Town Council	Deputy Borough Engineer, Town Hall, Croydon.
,, 18	Colne, Lancs Coke Conveyor	Gas Committee	F. Thorpe, Engineer, Gasworks, Colne.
,, 21	Calcutta—Sewage Pumping Plant	Corporation	Chief Engineer, 2 Municipal Office Street, Calcutta.
	FURNITURE:		
April 3	Hellingly, Sussex—Furniture, &c., for Asylum	——	R. Blaker, 211 High Street, Lewes.
,, 3	London, S.W.—Self-propelling Chairs	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
	IRON AND STEEL:		
April 4	London, S.E.—Railway Stores	S.E. and Chatham Railways Co.'s	Superintendent of Stores, 84 Tooley Street, S.E.
,, 4	Newcastle-upon-Tyne—Locks and Fastenings	——	W. Sutton, Jun., Secretary, Prudential Buildings, Moseley Street Newcastle-upon-Tyne.
,, 4	Manchester—Tramway Materials and Tools	Tramways Committee	J. M. M'Elroy, 55 Piccadilly, Manchester.
,, 7	Spezia, Naples, Venice and Taranto—Brass Bolts	Italian Navy	Directorate-General of Royal Arsenal, Spezia.
,, 8	Middleton, Lancs—Stores	Corporation	E. E. J. Anderson, Gas Engineer, Town Hall, Middleton.
,, 9	Leeds—Water Main	Corporation	City Engineer, Town Hall, Leeds.
June 15	Bangkok, Siam—Permanent-way Materials	Royal Siamese State Railways	Director-General, Gehots, Bangkok.
,, 15	Bangkok, Siam—Railway Stores	Royal Siamese State Railways	Siamese Legation, London.
	PAINTING AND PLUMBING:		
April 2	Bournemouth—Painting in Parks, &c.	Town Council	F. W. Lacey, Borough Surveyor, Municipal Offices, Bournemouth.
,, 2	Fermanagh, Ireland—Painting	——	C. Wilson, Registrar, Infirmary, Fermanagh.
,, 2	Burnley—Painting Offices	Guardians	J. S. Horn, Clerk, Union Offices, Burnley.
4	Stanwix, Carlisle—Painting at Chapel	Burial Board	Curator, Cemetery, Stanwix, Carlisle.
20	Tolworth—Whitewashing, Painting, &c., at Hospital	——	Miss Freeman, Superintendent, Hospital, Red Lion Lane, Tolworth.

Complete List of Contracts Open - *continued*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	ROADS AND CARTAGE:		
April 2	Great Harwood Lancs—Materials, &c.	Urban District Council	Surveyor, Town Hall, Great Harwood.
„ 2	Halifax—Street Formation	——	W. C. Williams, 29 Southgate, Halifax.
„ 2	London, N.—Roads, &c.	Guardians of St. Mary (Islington)	W. Smith, 65 Chancery Lane, W C.
„ 2	London, N.W.—Wood Paving	Hampstead Borough Council	O. E. Winter, Town Hall, Haverstock Hill, N.W.
„ 2	London, S.E.—Roadway Repairs	St. Olave's Union Guardians	Newman & Newman, 31 Tooley Street, S.E.1
„ 2	London, W.—Street Improvements	Ealing Town Council	C. Jones, Borough Engineer, Town Hall, Ealing, W.
„ 2	Pocklington, Yorks—Stone and Slag	Rural District Council	T. Robson, Clerk, Pocklington.
„ 2	St. Leonards-on-Sea—Roads	Trustees of Eversfield Estate	F. H. Humphreys, 6 Trinity Street, Hastings.
„ 2	Winsford, Cheshire—Stone for Macadamising	Urban District Council	J. Wilkinson, Surveyor, Council Offices, Winsford.
„ 3	Hull—Street Works	Corporation	A. E. White, City Engineer, Town Hall, Hull.
„ 3	Cowbridge, Glamorgan—Road	Rural District Council	G. E. Morris, Surveyor, Llanblethian, Cowbridge.
„ 4	Maldon, Essex—Works and Materials	Rural District Council	H. G. Keywood and E. J. Ennals, 6 Market Hill, Maldon, Essex.
„ 4	Chingford, Essex—Making-up, &c.	Urban District Council	W. Stair, 14 The Parade, Chingford.
„ 4	Dewsbury—Paving, &c.	Corporation	Borough Surveyor, Town Hall, Dewsbury.
„ 4	Mold, Flints—Materials and Cartage	Flintshire County Council	R. Lloyd, Inspector of Main Roads, County Buildings, Mold.
„ 4	Sandwich—Granite, &c.	Town Council	Town Clerk, Potter Street, Sandwich.
„ 4	Wath-upon-Dearne, Yorks—Materials	Urban District Council	C. Poole, Surveyor, Town Hall, Wath-upon-Dearne.
„ 4	Manchester—Cement, Broken Stone, &c.	Tramways Committee	J. M. M'Elroy, 55 Piccadilly, Manchester.
„ 6	St. Mellon's, near Cardiff—Metalling	Rural District Council	I. Thomas, Clerk, Union Offices, Queen's Hall, Newport, Mon.
„ 6	Cheadle—Materials	Urban District Council	E. Sykes, Surveyor, 9 High Street, Cheadle.
„ 6	Jarrow—Road Works	——	J. Petree, Borough Surveyor, Acca House, Jarrow
„ 7	London, N.—Road Works	Hornsey U.D C.	E. J. Lovegrove, 99 Southwood Lane, Highgate, N.
„ 7	Walkden, near Manchester—Flagging	Worsley U.D.C.	J. T. Proffitt, Surveyor, Council Offices Walkden.
„ 7	Chingford, Essex—Road Materials	Urban District Council	H. Bird, 14 The Parade, Chingford.
„ 8	Brentwood, Essex—Roads and Paths	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
„ 8	Woodhall Spa, Lincs—Granite	Urban District Council	J. E. Chatterton, Clerk, Horncastle.
„ 10	Chelmsford—Making-up-Streets	Rural District Council	H. G. Warne, Surveyor, Avenue Chambers, Market Rd., Chelmsford.
„ 14	Ashford, Kent—Materials, &c.	West Ashford R.D.C.	A. Sims, Highway Surveyor Charing, Kent.
„ 15	Midsomer Norton, Somerset—Road Materials, &c.	Urban District Council	Surveyor, Midsomer Norton.
„ 16	Oakham—Materials, &c.	Rutland County Council	B. A. Adam, Clerk, Oakham.
	SANITARY:		
April 2	Bishop Auckland—Sewers	Urban District Council	Surveyor, Town Hall Buildings, Bishop Auckland.
„ 2	Blaydon-on-Tyne—Scavenging	Urban District Council	R. Biggins, Sanitary Inspector, Council Offices, Blaydon-on-Tyne.
„ 2	Wortley, Sheffield—Scavenging	Rural District Council	G. E. Beaumont, Council's Surveyor, Grenoside.
„ 4	London, W.—Sewerage Works	Paddington Borough Council	E. B. B. Newton, Borough Surveyor, Town Hall, Paddington, W.
„ 4	Moira, Leics—Sewerage Works	Ashby Woulds U.D.C.	H. Walker & Son, Civil Engineers, King Street, Nottingham.
„ 6	Pakefield, near Lowestoft—Sewerage Works	Mutford and Lothingland R.D.C.	C. F. R. N. Weston, Surveyor to Council, Oulton Broad.
„ 6	Walsall—Sewer	Corporation	Borough Surveyor, Bridge Street, Walsall.
„ 6	North Shields—Filtering Material	Corporation	J. Mansergh & Sons, 5 Victoria Street, Westminster.
„ 6	Newburn-upon-Tyne—Sewerage Works	Urban District Council	T. Gregory, Engineer, Council Offices, Newburn.
„ 7	Chester—Sewers	Rural District Council	F. E. Priest, 13 Harrington Street, Liverpool.
„ 8	Rotherham—Removal of Refuse	Corporation	H. H. Copnall, Town Clerk, Town Hall, Rotherham.
„ 8	Brightlingsea, Essex—Removal of Refuse, &c.	Urban District Council	W. I. Osborn, Clerk Foresters' Hall, Brightlingsea.
„ 8	Derby—Sewage Disposal Works	Corporation	J. Mansergh & Sons, 5 Victoria Street, Westminster.
„ 9	Burton-upon-Trent—Drainage Works	Corporation	G. T. Lynam, Borough Surveyor, Town Hall, Burton-upon-Trent.
„ 9	Castletownbere, Ireland—Sewerage Works	Rural District Council	R. Evans, 53 South Mall, Cork.
„ 11	Killough, Ireland—Sanitary Works, &c.	——	Young & Mackenzie, Architects, Scottish Provident Bldgs., Belfast,
„ 14	Maesteg, Wales—Sewerage Works	Urban District Council	J. Humphreys, Engineer, Town Hall Chambers, Maesteg, Glam.
„ 21	Colwyn Bay—Sewerage and Sewage-Disposal Works	Urban District Council	Pritchard, Green & Co., 37 Waterloo Street, Birmingham.
„ 22	Tarporley, Cheshire—Sewerage Works	Urban District Council	B. Latham Parliament Mansions, Victoria Street, Westminster.
„ 23	Balfron, Scotland—Drainage Works	County Council	A. Forbes, 146 Buchanan Street, Glasgow.
	TIMBER:		
April 2	London, S.E.—Timber	Lambeth Borough Council	H. Edwards, Borough Engnr., Town Hall, Kennington Green, S.E.
„ 4	Lichfield, Staffs—Shedding, &c.	Staffordshire Agricultural Society	J. P. Jones, Secretary, Newcastle, Staffordshire.
„ 11	Abergavenny—Oak Posts, &c.	Joint Burials Committee	J. T. Rutherford, Clerk, Town Hall, Abergavenny.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
April 4	Wycombe—Town Hall and Municipal Buildings	£110, £26 5s.	——	T. J. Rushbrooke, 77 Easton Street, Wycombe.
„ 8	Lumley—Wesleyan Methodist Church	——	——	A. Young, Lumley.
„ 10	Yeovil—Laying-out Land for Town Hall, Municipal Buildings, Markets, &c.	£21, £10 10s.	——	Borough Surveyor, Yeovil.
„ 14	Blackpool—Technical Schools	£60, £25, £15.	£1 1s.	J. S. Brodie, Borough Surveyor, Town Hall, Blackpool.
„ 30	Fenton, Staffs—Library	£60, £30.	£1 1s.	S. A. Goodall, Surveyor, Town Hall, Fenton, Staffs.
„ 30	Sunderland—Alterations to Hall	£100, £50, £25.	£1.	J. W. Moncur, Borough Engineer, Town Hall, Sunderland.
No date	Glasgow—Branch Library	——	——	J. D. Marwick, Town Clerk, City Chambers, Glasgow.

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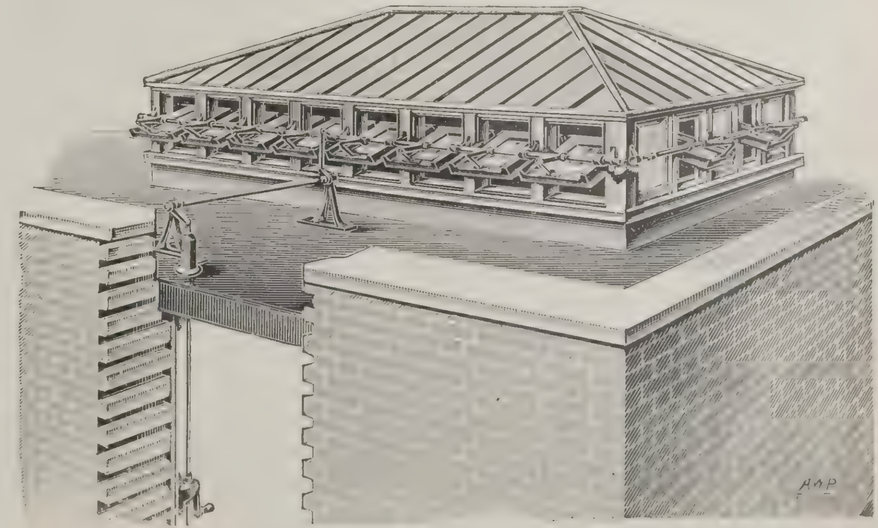

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

Bangor (Wales).—For the erection of an infants' school, to accommodate 250 children, at Hirael, Bangor, for the Bangor School Board. Mr. W. G. Williams, 220, High Street, Bangor:—

Jones & Evans	£3,796
D. Owen, Llandegfan	3,757
W. Thomas, Tregarth	3,629
W. Jones	3,348
R. & J. Williams, Upper Bangor	3,055
Jones & Williams, Penduf	2,904
Roberts & Owen	2,868
W. Parry,* Farrar Road	2,670

* Accepted. [Rest of Bangor.]

Barking (Essex).—For the making-up of the following streets in their district, for the Barking Town Urban District Council:—Boundary Road West, Boundary Road East, Eldred Road, Nelson Street, Trafalgar Street, Trafalgar Place. Mr. C. F. Dawson, surveyor:—

Rackham	£2,657
J. Smith, Barking, Essex	2,652
Free & Sons, Maidenhead	2,360
J. Jackson, Plaistow	2,303
Peters & Co., Stepney, E.	2,089
Parsons & Parsons, Ilford	2,006
D. T. Jackson,* Barking	1,967
Buxton & Jenner, Southend-on-Sea	1,960
G. J. Anderson, Poplar	1,900
Ambrose & Co., Grays	1,888
Iles & Co., Southend-on-Sea	1,850

* Accepted.

Brighton.—For reservoir and foundations for pumping station, Falmer, for the Brighton Corporation:—

J. & T. Binns, Croydon	6,710	0
T. Smart, Nottingham	6,538	17
Longley & Co., Crawley	6,500	0
Rowland Brothers, Horsham	6,099	0
H. J. Penfold, Brighton	6,097	0
B. Cooke & Co., Westminster†	5,887	0
Pedrette & Co., Westminster	5,690	0
C. Jay, Hove	5,150	0
R. Cook & Sons, Crawley†	4,941	0
A. E. Nunn, Tenterden	4,269	0

[Engineer's estimate, £6 000.]

* Accepted. † Took own dimensions.

Coalville (Leics).—For Coalville waterworks (contract No. 7). Mr. J. B. Everard, M.I.C.E., engineer, 6, Millstone Lane, Leicester:—

T. Herbert, Leicester	£3,220	0	0
H. Herbert & Sons, Lecester	3,217	8	0
F. Elliott, Leicester	3,185	0	0
Griffin Brothers, Hugglescote	3,075	14	4
W. Moss, Coalville	2,986	0	0
E. Orton,* Coalville	2,938	0	0

* Accepted.

Croydon.—For rebuilding shop premises, 11, 11A, 11B, and 13, George Street. Mr. A. Broad, architect, 22 George Street, Croydon. Quantities by the architect:—

W. Potter	£5,310	Smith & Sons	£4,853
D. W. Barker	5,239	Lascelles & Co.	4,796
Dawson & Son	4,987	B. E. Nightingale	4,790
Hanscomb & Smith	4,925	E. J. Saunders	4,694
Bulled & Co.	4,915	Akers & Co.	4,655
Battley, Sons & Holness	4,879	Smith & Sons, Ltd.	4,625
		Lorden & Son*	4,388

* Accepted.

Erith (Kent).—For the making-up of Horsa Road, Hengist Road and Ethelbert Road, Northumberland Heath, under the Private Street Works Act, for the Erith Urban District Council. Mr. A. H. Jennings, surveyor:—

R. Ballard, Child's Hill, N.W.	£3,333	0	0
D. T. Jackson, Barking	3,320	4	5
Lawrence & Thacker, 41, Lavender Gardens, S.W.	3,202	10	0
G. Rackham, Norwich	3,115	14	0
T. Adams, Wood Green	3,097	1	4
W. H. Wheeler, Southwark	3,080	7	6
S. J. Brice & Sons, Rochester	2,987	14	8
Streeter & Todhunter, Godalming	2,970	1	3
Free & Son, Maidenhead	2,896	11	5
G. G. Page,* Lyndon Road, Belvedere	2,614	3	4

* Accepted. [Surveyor's estimate, £2,946 1s. 5d.]

Harrow.—For making-up Greenhill Road, for the Harrow Urban District Council. Mr. J. P. Bennetts, surveyor:—

C. Ford, Harlesden	£1,252
J. Holloway, Wealdstone	1,134
Champness, Wealdstone	1,114
H. Brown, Watford	1,073
Wimper & Co., Hammersmith	1,066
Bracey & Clarke, Watford	1,038
Free & Sons, Maidenhead	1,019
T. Adams,* Wood Green	1,002

* Accepted. [Surveyor's estimate, £1,084.]

Leamington (Northumberland).—For making-up ten private streets at Leamington, for the Newburn Urban District Council. Mr. Thomas Gregory, engineer:—

M. D. Young, Hexham	£2,758	9	6
J. Wardlaw, South Shields	2,444	0	11
MacLaren & Co., Christon Bank	2,125	8	6
J. MacLaren & Son, Gosforth	2,059	6	6
T. Brown, Gateshead	2,042	1	6
J. W. Robson, Newcastle	2,009	14	11
G. E. Simpson,* Ellison Terrace, Newcastle	1,868	17	6

* Accepted. [Engineer's estimate, £1,960]

London, N.—For enlargement of the Upper Hornsey Road School, for the London School Board. Mr. T. J. Bailey, Board's architect:—

C. Dearing & Son	£4,737	0
G. Neal	4,734	0
J. Grover & Son	4,682	0
J. Simpson & Son	4,652	10
Marchant & Hirst	4,590	0
J. Willmott & Sons	4,467	0
T. L. Green	4,457	0
H. Wall & Co.	4,426	0
G. S. S. Williams & Son	4,368	0
Treasure & Son	4,365	0
Patman & Fotheringham, Ltd.	4,351	0
McCormick & Sons	£4,329	0
C. Cox	4,305	0
E. Lawrance & Sons	4,172	0
A. Port r*	4,070	0

* Recommended for acceptance.

London.—For the erection of school, Broadwater Road, for the London School Board. Mr. T. J. Bailey, Board's architect:—

Leslie & Co., Ltd	£25,176	Stimpson & Co.	£22,390
Holloway Brothers, London, Ltd	24,068	J. & M. Patrick	22,276
		W. Downs	21,897
W. Smith & Son	23,684	J. Garrett & Son	21,705
E. Lawrance & Sons	23,198	F. & H. F. Higgs	21,427
G. E. Wallis & Sons	22,884	Lathey Brothers	21,404
W. King & Son	22,870	W. Johnson & Co, Ltd.*	20,948
J. Marsland & Sons	22,861		

* Recommended for acceptance

London.—For the erection of the Fortess Road School, for the London School Board. Mr. T. J. Bailey, Board's architect:—

W. King & Son	£18,850	J. Appleby & Sons	£17,048
C. Dearing & Son	18,748	L. H. & R. Roberts	16,949
J. Grover & Son	18,580	W. M. Dabbs	16,905
Clarke & Bracey	17,827	Lathey Brothers	16,795
W. Smith & Son	17,785	G. S. S. Williams & Son	16,684
Leslie & Co., Ltd.	17,517		
C. Miskin & Sons	17,360	J. Willmott & Sons	16,675
McCormick & Sons	17,298	C. Cox	16,642
J. Simpson & Son	17,197	E. Lawrance & Sons	16,493
Patman & Fotheringham, Ltd.	17,168	Treasure & Son,* London & Shrewsbury	16,152
J. Allen & Sons, Ltd.	17,091		

* Recommended for acceptance.

London, N.W.—For the erection of dyeing and cleaning works, for Mr. J. Todd, of Westbourne Park. Mr. T. F. Shaw, architect and surveyor, Harlesden:—

Goodman & Sons	£2,458
Parfitt & Co.	2,269
C. Simmons	2,203
G. Robinson,* Holloway	2,185
J. Sharp †	1,870

* Accepted. † Withdrawn

London, S.E.—For the erection of factory premises at 57, Glengall Road, Peckham, S.E. Mr. C. Collas Robin, architect, 203, Strand, W.C.:—

Josolyne & Young	£2697	J. Anley	£2,440
Carmichael	2,685	Lascelles & Co.	2,410
Shurmur & Sons	2,619	G. Packer	2,334
H. L. Holloway	2,515	W. Nash,* New Cross	2,278
Sheffield Brothers	2,497		

* Accepted.

London.—For the erection of a junior mixed school, Middle Row, for the London School Board. Mr. T. J. Bailey, Board's architect:—

Killby & Gayford	£9,736	W. Downs	£8,771
Martin, Wells & Co., Ltd.	9,725	Rice & Son	8,696
C. F. Kearley	9,545	Holloway Brothers, Ltd.	8,669
General Builders, Ltd.	9,511	W. King & Son	8,656
		Treasure & Son	8,545
Leslie & Co., Ltd.	9,101	Lathey Brothers	8,495
McCormick & Sons	8,961	Stimpson & Co.	8,350
J. Appleby & Sons	8,852	Spencer, Santo & Co., Ltd.	8,063
W. Johnson & Co, Ltd.	8,835	E. Triggs*	7,995
J. Simpson & Son	8,787		

* Recommended for acceptance.

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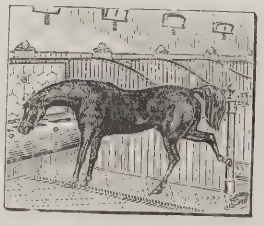

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London.—For the erection of a school, Brownhill Road, for the London School Board. Mr. T. J. Bailey, Board's architect:—

Martin, Wells & Co., Ltd.	£35,702
Thomas & Edge	34,989
T. L. Green	33,961
W. Downs	33,464
J. Marsland & Sons	33,356
W. Gregar & Son	33,156
J. Greenwood, Ltd.	33,097
J. Longley & Co.	32,894
G. Munday & Sons	32,847
J. Smith & Sons, Ltd.	32,491
Treasure & Son	32,245
E. Lawrance & Sons	£32,236
Stimpson & Co.	31,930
F. & F. H. Higgs	31,906
J. Garrett & Son	31,746
W. J. Mitchell & Son	31,67
G. E. Wallis & Sons	31,466
J. & M. Patrick	31,294
Spencer, Santo & Co., Ltd.	31,127
J. & C. Bowyer	30,887
W. Johnson & Co., Ltd.*	30,584

* Recommended for acceptance.

Merthyr Tydfil.—For the construction of a new roadway, about 1,930yds. long, for the Urban District Council. Mr. T. F. Harvey, A.M.I.C.E., engineer and surveyor:—

J. F. Seal, Merthyr	£2,280	0	6
Gould & Owen, Cefn, near Merthyr	1,872	8	0
J. Sutherland, Abercynon	1,516	17	4
R. J. Mathias, Pontypridd	1,501	7	7
Meredith, Gloucester	1,474	14	3
W. H. Evans, Dowlais	1,418	3	9
Jones & Davies, Dowlais	1,399	18	3
W. Brown,* Tudor Street, Merthyr	1,339	12	6

* Accepted. [Surveyor's estimate, £1,378 7s. 5d.]

Okehampton (Devon).—For the erection of a Wesleyan church and vestries, &c., at Okehampton:—

J. M. Harris	£4,769	10	3
R. F. Yeo & Sons, Torquay	4,220	18	9
W. Ball	3,825	0	0
J. Sleeman	3,479	18	0
H. Harris	3,375	14	3
Worden & Sons	3,370	6	8
R. F. Brealy	3,200	0	0
H. Green*	3,159	0	0

* Accepted. [Rest of Okehampton.]

Walton-on-Thames.—For making-up the street known as America Road (length about 1,630 yards), together with surface drainage, &c., for the Walton-on-Thames Urban District Council. Mr. Charles J. Jenkin, A.M.I.C.E., A.M.I.M.E., engineer and surveyor:—

J. Jackson, Plaistow	£4,220	9	3
Lawrence & Thacker, Clapham Junction	3,626	3	2
R. W. Swaker, Whitton, Hounslow	3,000	0	0
E. Iles, junior, Wimbledon, S.W.	2,953	10	1
T. Adams, Wood Green, N.	2,945	13	4
M. Meston, St. Mark's Road, W.	2,756	10	10
E. Betts, Enfield Highway	2,633	2	9
T. Free & Sons, Maidenhead	2,607	14	6
C. Horsell, Weybridge, Surrey	2,538	18	2
C. Ford, Harlesden, N.W.	2,527	15	6
M. Adamson, Kingston-on-Thames	2,515	0	0
G. Hebburn Hersham, Walton-on-Thames	2,441	0	0
W. Griffiths & Co., Ltd.	2,420	0	0
S. Kavanagh & Co., Surbiton, S.W.	2,349	19	10
C. Mott & Sons, Staines	2,341	8	9
J. C. Trueman,* Swanley, Kent	2,110	0	0

* Accepted. [Engineer's estimate, £2,383.]

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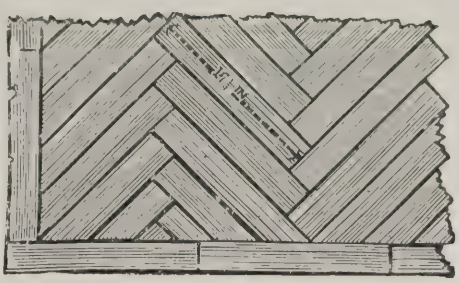

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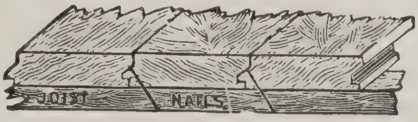

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TENDERS (*cont. from* p. xiv).

Oldbury.—For the taking up and construction of about 2,658 lineal yards of pipe sewers, varying from 9in. to 21in. in diameter, together with the alteration and reconstruction of manholes and lampholes in connection therewith, for the Oldbury Urban District Council. Mr. J. T. Eayrs, M.I.C.E., engineer, Clarence Chambers, 39, Corporation Street, Birmingham:—

Currall, Lewis & Martin, Birmingham	£6,420	16	10
Johnson & Langley, Leicester	4,345	18	3
J. White, junior, Handsworth	3,939	16	10
Fitzmaurice & Co., Birmingham	3,726	16	4
E. Boore,* Bearwood Road, Smethwick	3,110	18	4

* Accepted.

Plymouth.—For the construction of a covered reservoir, and other works connected therewith, at Blackadon Asylum, Wrangaton, Devon, situated about 14 miles from Plymouth, for the Lunatic Asylum Committee. Mr. Frank Hawarth, A.M.I.C.E., engineer, Municipal Buildings, Plymouth:—

A. N. Coles, Plymouth	£3,809	0	0
R. H. B. Neal, Plymouth	2 083	0	0
G. B. Andrews, Ivybridge	1,867	17	11
Dart & Pollard, Paignton	1,691	0	0
E. Pike, Torquay	1,676	17	3
Lapthorn & Co.,* 1, Clarendon Place, Plymouth	1,625	0	0

* Accepted.

Trowbridge (Wilts).—For the erection of new buildings at the Trowbridge and District Joint Isolation Hospital. Mr. J. H. Goodman, architect, Town Hall Chambers, Reading. Quantities by Messrs. H. Cooper & Sons, surveyors, Reading:—

			A	
R. Wilkins & Sons, Bristol	£10,483	4	£40	0
Wort & Way, Salisbury	9,910	14	31	17
E. Chancellor & Sons, Bath	9,464	0	58	0
H. Ash, Devizes	9,426	0	146	0
W. J. Bloxham, Banbury	9,342	7	115	7
Wills & Sons, Bath	9,134	0	35	0
H. Pittard & Son, Langport	9,115	10	35	0
J. & M. Patrick, Wandsworth, S.W.	9,050	0	57	0
Jenkins & Sons, Ltd., Southampton	8,977	0	49	0
Wakeham Brothers, Plymouth	8,967	0	51	0
J. G. Fincher & Co., Stratford-on-Avon	8,957	14	62	1
R. Butcher & Son, Warminster	8,878	17	21	0
E. C. Hughes, Wokingham	8,779	6	43	13
H. Hoskings, Hungerford	8 376	0	44	0
Hayward & Wooster, Bath	7,997	0	33	0
Mr. C. E. Fitt, Reading	7,905	0	73	0
J. Long & Sons, Bath	7,848	0	40	0
A. J. Colborn, Swindon	7,823	18	63	3
E. Linzey, Trowbridge	7,772	1	75	2
Stephens, Bastow and Co., Ltd., Bristol	7,574	0	54	0
G. Moore,* Trowbridge	6,934	3	49	11

A.—Extra for plastering walls of pavilions, &c.
* Accepted.

Winsley (near Bath).—For the erection of a sanatorium at Winsley, near Bath, for the Committee of the Gloucestershire, Somerset and Wilts Branch of the National Association for the Prevention of Consumption and other Forms of Tuberculosis. Messrs. T. B. Silcock, B.Sc., F.S.I., and S. S. Reay, F.R.I.B.A., architects, 47, Milsom Street, Bath:—

A. W. Long, Bradford-on-Avon	£11 207	4	5
Stephens, Bastow & Co., Ltd., Montpelier, Bristol	8,062	0	0
H. W. Pollard, Bridgwater	7,932	18	0
W. Webb, Railway Place, Bath	7,767	0	0
H. & C. Spackman, Hunt Street, Victoria Road, Swindon	7,695	0	0
A. J. Beavan, Bedminster, Bristol	6,990	0	0
E. Chancellor & Sons, Lower Bristol Road, Bath	6,926	0	0
Hayward & Wooster, Walcot Street, Bath	6,908	0	0
A. J. Colborne, Newport Street, Swindon	6,884	13	2
J. Long & Sons,* Railway Road, Bath	6,877	0	0

* Accepted.

Woolston (Hants).—For executing certain private street works in ten roads, about three miles in length, for the Itchen Urban District Council. Mr. T. A. Collingwood, surveyor, Woolston:—

J. Trueman Swanley, Kent	£6,770
Streeters & Todhunter, Godalming	6,476
F. W. Pettit, Itchen	5,446
F. Osman, Southampton	5,285
Douglas & Richards,* Southampton	4,592

* Accepted. [Surveyor's estimate, £5,564.]

METAL CEMENT.

A CORRESPONDENT in the "Deutsche Bauzeitung" writes warning the readers against the use of metal cement. He says that, lately, this very convenient, useful, soluble cement has been taken up pretty freely, even by some houses of importance. It will fuse at 120 degs. C., become fluid like water, and combines easily with stonework or with iron or other metals. On cooling it hardens and is resistant like Portland cement after five days, but, he says, on holding a piece of metal cement in the hand the heat will cause it to yield a smell which betrays sulphur, which constitutes the fusing element of the composition. Now it has been ascertained that sulphur will ultimately ruin iron as well as the hardest stone. If damp or air gets to it decomposition works very quickly, and even if it is kept away from both decomposition will take place, though a longer time will be required. It forms iron sulphide. No such metal packing has yet been found in old building work. On the other hand machinery foundations, garden railings, or such like constructions have been known, on being taken up after three years, to have the iron parts thinned down as though they had fused.

The writer of the letter adds, by way of conclusion, that the directors of the Baden State Railways have forbidden the use of metal cement in connection with their work.

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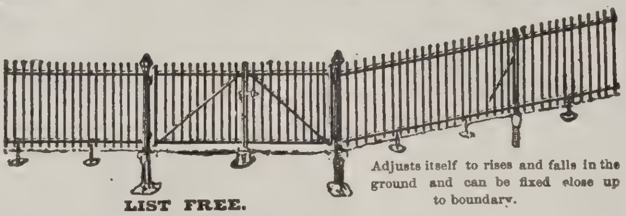

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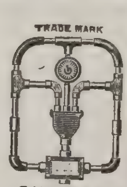

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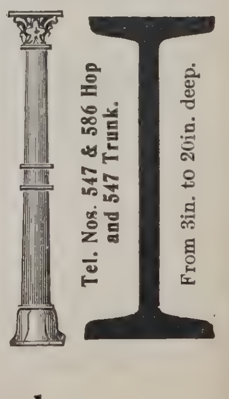
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THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD.

April 8, 1903. Vol. 17, No. 426. 9, East Harding Street, E. C.

Wood in City Buildings. With the advent of concrete and iron construction, and of steelwork protected with a terra-cotta or similar casing, wood came to be regarded as an undesirable and dangerous material for City buildings: then, after several great fires in so-called "fire-proof" structures, people looked back to wood as affording perhaps the best fire-resisting construction after all: finally we are arriving at the true estimate, which, so far as human life is concerned, puts concrete and metal construction in a far higher category than wood. A floor built up of hardwood planks might perhaps be more fire-resisting than any other, better able to withstand the shock of falling weights and the disintegrating effects of water: so that from the standpoint of saving the building itself one could wish for nothing better. In Hamburg such construction is adopted throughout. But, apart from questions of cost, there is one very grave defect with wood of all kinds when the safety of human beings is considered: it is the volume of smoke generated. There are not many fires where persons are actually burnt to death: more often they are suffocated or killed in panic caused by outbursts of smoke. So that this question of wood construction is a vital one. Our attention is more particularly drawn to it just now by the recent discussion at the Royal Institute of British Architects and the publication of a test made by the British Fire Prevention Committee with a floor of yellow fir timbers, the details of which are given on p. 113 of this issue. Over and over again firemen have given their preference for wood—"concrete, stone and iron are most dangerous when we get to work on them"—but as Mr. Max Clarke observes in the publication to which we have referred, it is now clearly established that hardwood construction, such as oak, is not conducive to the saving of life, because of the intense smoke it produces. "Steel and concrete may, in the end, be destructive, so far as the structure is concerned, but if properly protected, and perhaps even if not protected at all, they are of immense advantage, in that they do not produce direct cause of death from smoke or vapour. No amount of good planning would avail if the smoke were so dense that a person could not live through it, to get out of a building, and, equally, no amount of solidity of timber construction could be looked upon as satisfactory if the result were as above stated." This fact cannot be too much emphasized. There may be failures among the many systems of fire-proofing with concrete and steel - perfection can only be arrived at by experience—but we believe the systems to be based on the right principles and that eventually "fire-resisting" buildings will prove incomparably safer than those of the "slow-burning" type.

———

Lambeth Bridge. From a report of the Bridges Committee of the L.C.C. it appears likely that a Bill to obtain Parliamentary powers for the reconstruction of Lambeth bridge will be obtained during the next session. That a new structure is urgently needed is a matter of some notoriety; the present bridge has not for a long time been adequate in either strength or width for the traffic it was called upon to take. Built in 1861, it is of the suspension type; but though strengthened in 1888 under the supervision of Sir Benjamin Baker, it is still deficient in stability and has to be used under restrictive conditions. It was the original intention of the L.C.C. that the rebuilding of this bridge should follow the completion of Vauxhall Bridge, and the temporary bridge erected to take the traffic from the last-named was intended afterwards to perform a similar office for the sister structure at Lambeth. The difficulties of the foundations, the controversy over the numerous designs and the change of engineers are matters that have doubtless combined to prolong the re-erection of Vauxhall Bridge, but after making all allowances it is difficult to acquit the Bridges Committee of contributing to the delay by vacillation and indecision. Undoubtedly a masonry bridge is regarded by architects as more desirable than a steel one, the conditions being favourable, and beyond question a masonry bridge is more enduring and less expensive to maintain. Common-sense will therefore direct the erection of such bridges whenever possible. But there are occasions when by reason of gradients, headway required, cost, or speed in erection, a steel bridge becomes a necessity. Such a necessity is dictated, says the Bridges Committee, by the conditions governing Lambeth Bridge. The gradients are very steep, being "at present 1 in 19 and 1 in 22 on the north and 1 in 20 and 1 in 23 on the south. Under an agreement the Council could not raise the level of the centre of the road at the junction of the bridge approach with Lambeth Road and the Albert Embankment more than 3ft. 10in. above the present level, and as a result that height fixed the level of the beginning of the road over the bridge." Under the most favourable circumstances no masonry bridge could be erected with a less gradient than 1 in 25. Further, during erection it would be impossible to obtain the clear headway of 15ft. at high-water mark required by the Conservancy under the two arches on either side of the centre span. These conditions, if correctly stated, undoubtedly call for a steel structure, and we think it quite unnecessary for the Bridges Committee to state the case so apologetically. The best structure is the one that conforms to the natural conditions and limitations of its position and purpose. Architects have no objection to a steel bridge *per se*, but they demand that the design, whether for steel or masonry bridges, shall be consonant to the material employed, and in this respect the County Council have lamentably failed. If the new Lambeth Bridge is to be of steel, let it frankly appear as steel, and let all cast-iron balustrades, bad Gothic tracery, cast-iron Corinthian columns and other frippery be omitted. Let the bridge be built up of standard sections with that good, plain lattice effect which has never been equalled in this class of design; and though the foundations must be of masonry, let the abutments above the high water be of lattice steel, so that the bridge presents a light, graceful and homogeneous appearance from bank to bank. If anyone doubts the artistic effect of latticework let him compare the beautifully graceful effect of the arc-lamp standards on the L. & S.W.R. at Nine Elms Goods Station, and elsewhere, with the cast-iron abominations that the County Council have placed on the Embankment. It is something, no doubt, to ask the County Council for a reasonable design, but Parliament should be thoroughly satisfied that the design has the approval of the highest artistic experts before it is passed.

———

Apsley House. The announcement of the forthcoming sale of Apsley House—adjoining Decimus Burton's screen at Hyde Park Corner — will be read with some surprise. It was of course the national gift to the Duke of Wellington; but it has architectural interest as well, for it was originally a plain brick mansion built about 1785 from designs by the Brothers Adam. Its present Bath-stone front dates from 1828, when it was cased, the front portico and west wing (containing a gallery 90ft. long) being added at the same time by S. & B. Wyatt at a cost of £130,000. It is to be hoped that the house will not be handed over to a building syndicate, as seems probable with Devonshire House.

FIRE-RESISTING BUILDINGS.

IN 1898, after the Cripplegate fire, a conference of architects and insurance surveyors held two meetings with a view to ascertain what reduction of premium the insurance companies would allow if buildings were constructed under the following conditions: —

1. If buildings are flat-roofed, with hard fire-resting material.

2. If floors of iron and concrete, constructional ironwork covered with fire-resisting material, as required by the London County Council regulations, floors connected only by staircases, which, with the landings, to be enclosed by fire resting material, such as cement on metal core, now much used; lights in these partitions to be sheet plate. Teak or oak doors, treads and risers.

3. Similar floors, but pierced for lift, enclosing walls of brick rising through roof, and openings on each floor protected by light iron shutters.

4. Wood floors and joints pugged 4in. between joists with some fire-resisting material, pierced for stairs, constructed as in No. 2.

5. Pugged floors as above, with lift in addition, lift enclosed with fire-resisting partitions as stairs in No. 2, and with iron doors.

6. If the lighting areas or well-holes common to buildings in different occupations be carried down to the basement floors and not roofed over by skylights on the ground floor.

7. If windows in front and back wall fitted with iron sashes and frames but left without shutters.

8. If opposing windows, within, say, 20ft., are fitted with iron shutters or some fire-resisting material for blinds.

Any other heads or points which the Offices may desire to note or which are set out in existing tariffs.

At a second meeting a tariff was submitted in which a normal building with a minimum rate was given, and the rate increased to meet ten or twelve different modes of construction.

This tariff appeared to be exactly what the Science Committee of the R.I.B.A. had been endeavouring to obtain from the Offices, and they were strongly of opinion that if the insurance offices regulate their premiums on any principle whatever and agree upon a tariff among themselves, it is only fair to the insurers and their advisers that such tariff with clear definitions should be available for public use, but this was not agreed to. Since this conference some rules for standard fire-resisting buildings, dated February 1902, have been issued by the Fire Offices' Committee (see the BUILDERS' JOURNAL for January 22nd, 1902). The rules are numbered 1 and 2. No. 1 applies only to cotton mills, flax mills, woollen mills and worsted mills. No. 2 gives rules for standard fire-resisting buildings, not including those scheduled above.

After a careful consideration of these rules the Science Committee of the Royal Institute of British Architects report that it would appear they have been drawn up without reference to the London Building Act, 1894, and in several points the rules differ from the provisions of the Building Act. "It would greatly facilitate business if these rules could be made to accord with the Building Act, and if the Fire Offices' Committee would draw up a tariff which would be available by the public where the normal building should be the type allowed under the Building Act, with ten or twelve varieties of construction or arrangement, whereby the normal rate would be reduced. We recommend the Council to approach the Fire Offices' Committee, to ascertain whether they would meet a Committee of the Institute to discuss these rules and tariff, with a view to making them workable. It is the general experience that the rules as at present drawn do not encourage fire-resisting construction."

Mr. H. D. Searles-Wood referred to this matter at last week's meeting of the Institute, when a paper on "Fire-Prevention" was read by Mr. Horatio Porter, A.R.I.B.A.

Mr. Thomas Blashill, late superintending architect to the London County Council, considered that experimental tests were generally valueless because they were conducted under conditions which would never obtain in actual fires—what use was it, for example, to test materials which had been saturated with paraffin or tar? He deprecated the employment of hollow partitions and shafts because of the "fire haze" they created, which did not burst into flame until it came into contact with fresh air. He hoped we were coming to the time when there would be no wooden floors—he had constructed floors of iron and coke-breeze quite as economically. Coke-breeze, having already passed through the fire, was one of the safest materials, provided it was used in the proper proportions. Burnt ballast also was admirable.

Speaking unofficially on behalf of the Fire Offices, Mr. Mead (Sun Fire Office) said they were always ready to consider suggestions from the Institute, and the present one would be sure to receive every attention. As to incendiary fires, he said that their proportion was small, though it was possible to conduct them in a manner which covered the traces of their origin.

Mr. Lewis Solomon, F.R.I.B.A., spoke of the amicable relations which existed between architects and the Fire Offices' officials, mentioning that though the Offices did not publish any requirements they had particulars which they were willing to lend, while their surveyors were most obliging in looking at drawings and making suggestions which were very helpful. But the Offices showed a want of business tact in regard to their premiums. After the Cripplegate fire those owners who wished to rebuild their premises in a fire-resisting manner asked for a reduction in their premiums, but this was not granted. He was very much in favour of teak staircases, and said that though they might not be permissible in factories under the London Building Acts, he believed they would be a hundred times safer than some of those which satisfied the regulations. Concrete stairs, which made up nine-tenths of the new constructions in London, were far better able to resist fire than stone stairs; but teak was better.

Mr. H. Lovegrove, A.R.I.B.A., referring to sprinklers, said that when water was allowed to run from the upper floors, where a fire might have originated, it was calculated to spoil the goods on the floors below. He mentioned a friend's recommendation that the sprinklers should be 8ft., not 10ft., apart. In his opinion, good concrete stairs were the best. Stone stairs were very inferior. Coke-breeze was a first-rate material, and he thought a floor made with it stood better than one of ballast. He disapproved of armoured doors.

Mr. Lewis Banks, F.R.I.B.A., urged the necessity of armouring concrete. With a fierce fire the concrete broke through, and holes were left which allowed the flames to pass, whereas if the concrete were armoured it would hold together. The new Midland Hotel at Manchester, which was perhaps the most scientifically fire-resisting hotel erected in this country, had stairs of concrete armoured on the face and covered with marble. After much experience he had found hematite slag to be the best fire-resisting material. It took longer to set, but when set it was very much harder than Portland cement, and it withstood fire better than any other material with which he was acquainted.

Mr. Max Clarke, A.R.I.B.A., said it was permissible under the Building Acts to drive wood plugs into the walls with iron holdfasts in them, with the result that in the event of a fire the holdfasts became red hot, the wood burnt, and might set fire to skirtings, &c. There could be no such thing as a "fireproof" building. They could encase their columns and girders, but in time these would get as hot as their coverings. Firebricks of course withstood fire better than other bricks, but not so much weight could be put upon them; consequently it often became necessary to chose a medium brick. He differed with Mr. Blashill that ballast was a good material. At the Theatre Royal fire at Glasgow, where the corridors were of ballast concrete, when the water was turned on the whole of the floors fell through: whereas from the tests made by the British Fire Prevention Committee it had been found that coke-breeze concrete, though incandescent throughout, did not collapse. Cast iron was satisfactory so long as no water got near it, but when that happened it was useless. In Hamburg fireproofing with heavy timbers was adopted, an admirable system, but bolts were allowed to be passed through the timbers—a mistake, because the bolts became hot and burnt the wood for several inches around them. Though timber construction might withstand fire, it produced a vast amount of smoke, and that was a grave defect. Iron doors were useless if hung only at one point, as was permissible under the Building Acts. Slag wool he considered to be the best non-conducting and fire-resisting material, far better than asbestos.

Mr. John Slater, B.A., spoke of the extreme importance of making roofs fireproof, which might be done with concrete asphalted. It seemed strange to him that the London Building Acts should be so stringent in some matters, while allowing a building of, say, five floors to be constructed with wooden joists and no ceilings.

Temporary Hospital Buildings.

An article on this subject was published in the "Lancet" for March 25th, in which the following recommendations are made for the treatment of existing temporary buildings:—

Floors.—In order to reduce the fire risk in existing buildings of wooden construction in the first instance the floor should have the spaces between the joists filled in with some non-combustible substance such as concrete or hollow plaster slabs.

Partitions.—The lower part of the partitions at least should also be treated in the same way, as wood partitions when filled in with brick nogging and plastered are practically fire-resisting. In the case of most temporary buildings the floors will be found to be raised from the ground, the joists being carried upon brick piers. This is done partly to avoid the uneven surface of the site and also to afford ventilation. All internal wood lining must be removed and plaster slabs on metal lathing substituted; in cases where the spaces between the wood framing are not filled in as suggested the plaster slabs should have a backing of silicate cotton as a protection against both cold and fire.

Ceilings.—The wood linings should be removed and fibrous-plaster slabs on metal lining substituted. All exposed ironwork or wood tie-beams and collars should be encased in some fire-resisting material, such as asbestos.

Lighting.—All gas lights in asylums should be enclosed in locked lanterns.

Heating.—Gas stoves should stand upon a solid stone base and any adjacent woodwork should be protected by an intervening piece of very fine mesh iron-gauze. This will be found a better non-conductor of heat than the sheet iron in common use. Slow-combustion iron stoves, gill stoves, and independent gas stoves with flue pipes are open to objection. If used, care should be exercised as to over-heating, and special attention is required to see that the flue pipes are properly insulated where they pass through the roof or wall. The pipes at this point have a tendency to perish quickly. They should here pass through a second larger tube with a free air-space between them, and the outer tube should be packed with silicate cotton between it and the framing of the roof or wall. Where it passes through the roof this air-space may be utilized for extracting the vitiated air by extending the outer tube a few feet above the roof, as is often done in the case of steamships for ventilating the lower decks by means of an outer casing to the funnel. Many years ago this system was successfully applied to the Hospital for Sick Children in Great Ormond Street by a Mr. Knight. Heating by hot water is certainly safer, cleaner, and more healthy. It is much more expensive in the first instance, but more economical in maintenance. A portion of the pipe should pass through a water chamber to prevent undue dryness in the air.

A Fire Test.

Publication No. 73 of the British Fire Prevention Committee has just been issued. It deals with a floor of fir supports and oak flooring tested for two hours last October. The floor was 22ft. 3in. by 10ft. in the clear, and consisted of two 10in. by 12in. beams of yellow fir placed across the testing-hut, with four 10in. by 10in. joists notched into them at 2ft. 6in. centres, oak boards 8½in. wide and 2½in. thick being spiked on top: a 15in. by 15in. yellow fir post supported the floor in the centre. The floor was loaded with 232lbs. to the sq. ft., distributed. In four minutes smoke issued from the joint between the parapet-wall and the oak flooring. In 89 minutes flame first came through the floor. In 109 minutes a small portion of the oak flooring fell. The post, beams and joists were considerably reduced in size and charred, the post to a depth of about 1¼in. and the beams and joists about 2in. The average temperature of the fire was about 1,400 degs. Fahr.

SIR JOHN VANBRUGH.

THE concluding meeting of the session of the Leeds and Yorkshire Architectural Society was held on March 26th, Mr. Butler Wilson, F.R.I.B.A., being elected president for the third successive year. Following the election of officers, a lecture was delivered by Mr. Robert P. Oglesby on "Sir John Vanbrugh, Dramatist and Architect."

The line which divided Vanbrugh's work as a playwright and his career as an architect was clear and decided. There was, in a sense, a slight overlapping of vocations, inasmuch as his first completed architectural work was a theatre in the Haymarket. This sudden leap from the drama to architecture was taken as a glorious joke by his brother wits and litterateurs, who forthwith let loose such a flood of sarcasm and raillery upon his architectural efforts as would have crushed with ridicule any ordinary individual. A house that Vanbrugh erected for his own occupation on the site of the ruins of old Whitehall was dubbed by the wits the "Goose-pie." The first great scheme of this imaginative but unschooled architect was the design and erection of Castle Howard, Yorkshire, for the Earl of Carlisle, in 1702. His want of training was here observable on all hands, but his genius for the picturesque atoned for many defects. The Earl of Carlisle was so satisfied with the designs for Castle Howard that he created Vanbrugh Herald Clarenceux King at Arms. Walpole declared that the Mausoleum there "would almost tempt one to be buried alive."

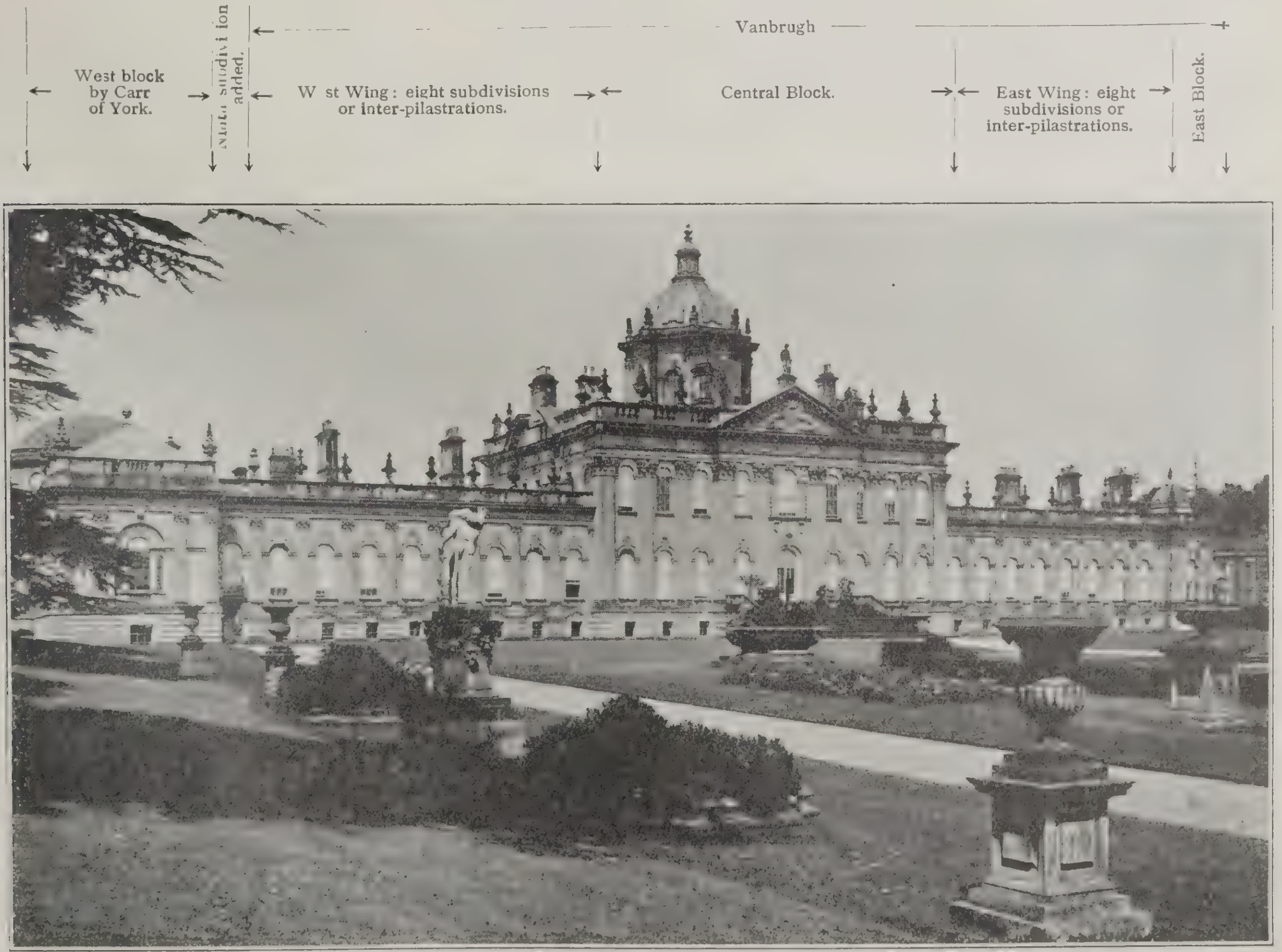
In the east wing of the south front of Castle Howard there are, contrary to classic law, an even number of sub-divisions—eight, whereas to the west wing are allotted nine such spaces. Mr. Oglesby advanced the theory that Carr, of York (the architect of Harewood House), in completing the west block, added another space, thus correcting Vanbrugh's want of training.

Among other notable buildings designed by Vanbrugh were Clarendon Building, Oxford; Seaton Delaval; King's Weston, near Bristol; Fleurs Castle, Roxburghshire; Kneller Hall, Hounslow; Grimsthorpe Lincolnshire; and Stowe, Buckinghamshire. Reserved to the last was Vanbrugh's greatest work, "Blenheim," erected by a grateful nation for that famous son of Bellona, John Churchill, first Duke of Marlborough, in commemoration of his glorious victories over her enemies. The plan of Blenheim at once stamped Vanbrugh as a man of powerful imagination, and, concluded the essayist, notwithstanding his glaring want of refinement and taste, he would, had he lived longer and studied further, have become a really great architect. His ponderous extravagances, however blamable in detail, were never contemptible in the whole; but it was this love for the ponderous in architecture that inspired Dr. Evans's witty and not inappropriate epitaph—

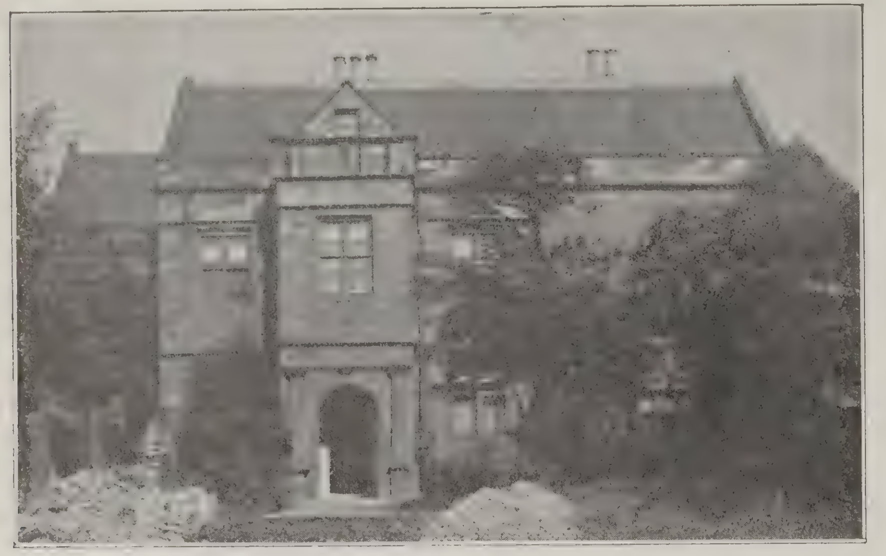
> Lie heavy on him, earth! for he
> Laid many heavy loads on thee.

All the buildings of this unschooled architect were conceived on such a huge scale that it has been quaintly remarked that their ruins will have far greater effect on the minds of posterity owing to the additional piles which conjecture will supply in order to give meaning to the whole.

It may be mentioned that a melodrama by Mr. Oglesby, in collaboration with another gentleman, was produced last week at the Prince's Theatre, Bradford.


Vanbrugh
West block by Carr of York.
Ninth subdivision added.
West Wing: eight subdivisions or inter-pilastrations.
Central Block.
East Wing: eight subdivisions or inter-pilastrations.
East Block.

THE SOUTH FRONT OF CASTLE HOWARD, YORKS. SIR JOHN VANBRUGH ARCHITECT.



KNOSTROP HALL, NEAR LEEDS: SOUTH FRONT.

KNOSTROP HALL.

KNOWESTHORPE HALL, or, as it is more generally known, Knostrop Hall, is situated in the village of that name about two miles east of Leeds. The hall was once the home of the Baynes family, as indicated by the cross-bones over the front entrance. On one side of the building are the remains of a structure which once probably formed a handsome summer-house or porch having open arches on two sides, and to the right and left of one arch are to be seen two rudely-carved statues on pedestals. There are also indications of the former existence of two statues to the right and left of the adjacent arch. The gateway shown to a larger scale by the drawing on p. 117 has recently been pulled down; it was opposite the front entrance and made a most striking feature, of which the stone "chairs" and semicircular steps played a not unimportant part.

Correspondence.

Early English and Decorated Work in Devon and Cornwall.

To the Editor of THE BUILDERS' JOURNAL.

EXETER.

SIR,—Referring to a reply on p. 107 of your last issue relative to remains of these dates near Plymouth, it may be remarked that, outside Exon.'s unrivalled cathedral, there are practically few remains. The great wave of rebuilding that swept the two counties in the fifteenth century left hardly anything of an earlier date save Norman doorways, arcades, fonts, and chancel and tower arches. The one great and glorious example of Norman work (if we except the cathedral towers) is the noble west front (and two south-western bays) of the church of St. Germanus at St. German's (about ten miles west from Plymouth), the ancient seat of the see of Cornwall. Those who would learn much interesting matter about this church should procure "The Architectural History of St. German's, Cornwall," by the Rev. Preb. F. C. Hingeston-Randolph, M.A., the learned rector of Ringmore, published by William Pollard & Co., of Exeter (1902). The best example of Decorated work in Devon is probably the parish church of St. Andrew at Aveton-Gifford, about sixteen miles south-east of Plymouth. The great Walter de Stapeldon, bishop of Exeter (A.D. 1308-26), who transformed the Norman towers into transepts, built the rood screen, the sedilia and bishop's throne in his cathedral, and was probably responsible for the existing Decorated work in his old parish church. There is no more beautiful work of that period in England than Exeter Cathedral (fifty miles from Plymouth). For Early English work the Beer stone arcadings in the eastern ends of the north and south (internal) walls of its Lady-chapel (Bishop Marshall, A.D. 1194-1206, and Bishop Simon of Apulia, A.D. 1214-23) stand unrivalled for infinite grace and beauty. Further, the fifty miserere in the choir (one unfortunately removed thirty years ago, and now preserved in the cathedral library), by Bruere (A.D. 1224-44), are the most complete, perfect and interesting series of their period not only in this country but in the whole world.

Yours truly, HARRY HEMS.

Architecture in Lancashire.

To the Editor of THE BUILDERS' JOURNAL.

LONDON.

SIR,—I am obliged to Mr. Cheetham for so kindly supplementing the information which I was able to give "Vignola" about churches in Lancashire, and should be glad if other readers would likewise assist me in the often difficult task of recommending buildings to study in certain restricted districts. Often, too, such questions as "Vignola's" come from students who have obviously resided for some time in the districts named, and I would appeal to such that they should exhaust local resources of information for themselves before writing to THE BUILDERS' JOURNAL — putting someone else to the trouble of doing what they could better and more easily do for themselves.

With Mr. Cheetham's closing remark—that in his opinion "students should not neglect what old work there is in their immediate neighbourhood merely because it is inferior to that further away"—I fear I cannot agree. The young student who is trained upon indifferent work is likely to produce indifferent work. The utmost care is therefore necessary to secure that young men should study only that which is good.—Yours truly,

G. A. T. M.

THE ARCHITECTURAL ASSOCIATION.

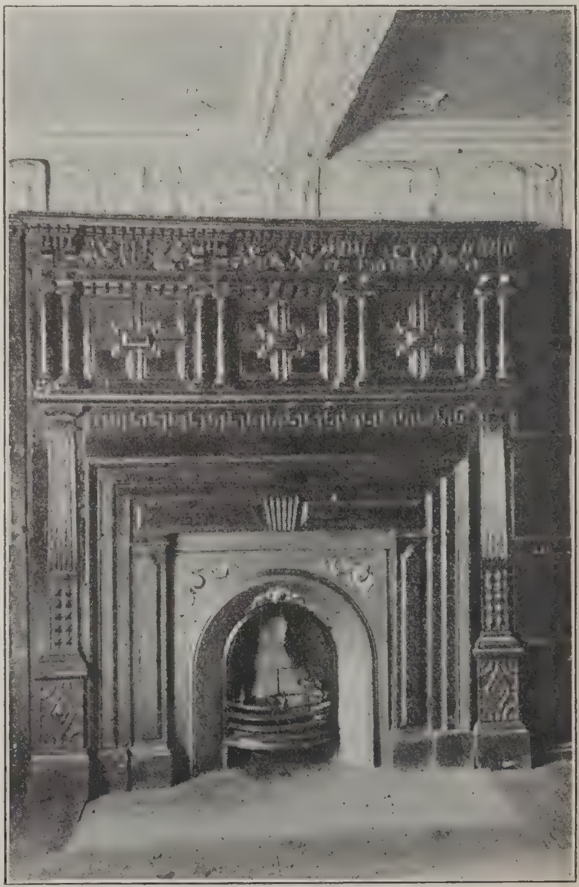
ANDREA PALLADIO.

By BANISTER F. FLETCHER.

A MEETING of the Architectural Association was held last Friday evening, Mr. Henry T. Hare presiding. Mr. Alan J. Healey having been elected a member of the association, Mr. Banister Fletcher read a paper on "Andrea Palladio: His Life and Work," of which the following is a short summary:—

Of the early life and parentage of Andrea Palladio there exists but little information. All his biographers, with the exception of Paolo Gualdo, describe him as having been born in the year 1518. The latter, however, informs us that he was born in 1508, thus making him just ten years older; but, unfortunately, there is no further confirmation of this statement.

Palladio's father, whose name was Pietro, was a mason at Vicenza, where he died in 1545. Though we should much like to know some of the circumstances of his boyhood and the various influences and episodes which contributed to his success in after years, all we are privileged to learn is from Palladio himself, for he tells us that he early possessed a great love and natural inclination for architecture, and that, as a boy, he read Cæsar's "Commentaries," and imagined and designed the bridge over the Rhine from Cæsar's written description, afterwards utilising this over the Bacchiglione, near Vicenza. Gualdo mentions that Palladio also seriously studied mathematics, which he considered an essential part of an architect's education. His humble birth is corroborated by Leoni, who describes him as of "mean extraction," adding, "that in consideration of his great abilities, and as a reward for the honours he did his native city, he was



OLD FIREPLACE IN DINING-ROOM, KNOSTROP HALL.

made free of same, and received into the body of the nobility." But this honour only came to Palladio when his fame was established throughout the whole of Northern Italy. It is evident that his early life was a studious one, and we naturally infer that a most excellent education was conferred upon him by his father, the mason Pietro, who, in all probability, sacrificed much to secure his son's future.

Palladio appears to have soon deserted sculpture for architecture, meanwhile also studying the works of Vitruvius, Alberti, Michelozzi, Cronaca, and San Gallo. It was Palladio's good fortune to be born in an age pregnant with a restless ambition to continue the work of the Renaissance; it is, therefore, not surprising to find him also fired with the prevailing spirit of his time.

Brunelleschi's great and original efforts a century before had given the necessary impetus, and had encouraged many others to follow his example. Brunelleschi was the pioneer in Florence, his greatest works being the dome of the Cathedral, Santo Spirito, and the Pitti Palace. Bramante, of Urbino, will be remembered as the designer of St. Peter's, and Peruzzi as the architect of the Villa Farnesina. Sansovino, the master of the Venetian School, built the Library of St. Mark, Venice, lately damaged by the fall of the Campanile.

In accordance with the custom of the times, Palladio possessed a patron in Gian Giorgio Trissino. It was with this patron that he first visited Rome in 1541, when he was thirty-three years of age. He must have been exceedingly industrious during this visit, as his drawings of the Classic buildings in his treatise testify. He visited also at various periods Ancona, Rimini, Naples, Capua, Pola in Istria, and Nîmes. In May, 1547, we also hear of his visiting Tivoli, Palestrina, Porto, and Albano, returning to Vicenza in July, and taking with him nine books, entitled "L'Italia liberata dai Goti." In 1551 he is for the third time in Rome, "in the company of Venetian gentlemen."

During his stay in the ancient city no doubt Palladio came often in contact with many of the great artists of the day. Here he could gaze upon the great achievements of Bramante, who died in 1514, and Raphael, who died in 1520, and could study the progress of the cupola of St. Peter under the masterly direction of Michelangelo, and see this great master's work on the Palazzi dei Conservatori on the Capitol. Here, as Angelo and San Gallo before him, he might wander to see the Laocoon which had been disinterred in the vineyard of Felis di Fredi, and was now placed in the gardens of the Vatican. Letarouilly informs us, that while Palladio was measuring here he built an altar in the long hall of the hospital of S. Spirito, the only work of his to be seen in Rome.

In Palladio's writings we find interesting information regarding the architects and painters of his day. Especially does he eulogise Vasara, whom he styles "a painter and architect of great merit." We also find mention made of Sansovino who died in 1570, accompanied by much praise of the buildings erected by him. Other contemporaries are mentioned, amongst these being San Micheli, the great military architect of the Renaissance, whose special work is evidenced in his fortresses and palaces at Verona.

We have no information regarding Palladio's marriage, neither do we find any mention made of his wife. He had a family of four sons and one daughter. The eldest son, Marc Antonio, became a sculptor, like his father; we find him living at Venice in 1588, and he died in 1600. Leonidas, who assisted his father, died about 1574. We read of his directing the building of the dome at Montagnana in 1566. Orazio, the third son, studied law in Padoa in 1564 and died in 1574. Silla, the youngest, was an architect, and assisted by Scamozzi, completed the Teatro Olimpico, upon which his father was engaged at the time of his death, and died about 1627. Zenobia married Dell Fede, a goldsmith, whose name appears inscribed in the guild of goldsmiths at Vicenza.

Before the year 1564 Palladio was in legal documents called "of Vicenza" and "inhabitant of Vicenza." In those relating to the marriage of his daughter he appears as "civis Vicentine," a distinction worthy of mentioning in the days of the Republic.

None of the honours conferred on Palladio can exceed the publication of his works, which was undertaken with much courage and diligence by Ottavio Bertotti Scamozzi, who measured, drew and restored his buildings. This book contains most interesting engravings and commentaries, showing much learning and scholarship. It embraces four large volumes, of which many editions have appeared both in Italian and French.

KNOSTROP HALL: REMAINS OF PORCH.

Though infirm for a long time, Palladio nevertheless continued to take an active part in the building of his edifices, and when the end came it found him at work upon his final effort, the Teatro Olimpico.

Palladio's death was a great grief and loss to his loyal native city, which revered him not only for his genius, but for his many other virtues—for he was both amiable and benevolent, and beloved by those under him.

His principles are best exemplified in his buildings, but a striking point about many of them lies in the fact that he was not slavishly bound by his own rules as to the proportions of the classical columns and their entablatures. Like many another, he was an exemplar of the saying that a genius can be above rules. Although he refers in detail to the various parts of a building and their proportions, he has left no information as to the design and composition of structures as a whole.

It has been held that he was specially in favour of obtaining size and dignity in his composition by including two storeys of his façades within one order. This has been said to have influenced English architecture in contrast with the precepts of Vignola which were followed in France; but Palladio employed both methods equally, while he was also fond of marking his ground storey with rusticated blocks of masonry, expressing his first floor (piano nobile) by an order, and his upper (or attic) story by flat pilasters. He also employed the attic storey, seldom used by other masters, in lieu of a great crowning cornice.

His style has been defined as a mean between the severe use of ancient forms and the licentious style of those who reject all rule whatever.

Speaking generally, the plans of his buildings were suitable to the requirements of the Venetian nobility for whom they were erected. The fact that they are not well suited to our present requirements cannot detract from their stateliness and convenience when considered in relation to the age in which they were erected, and the climate of Italy. The disposition and proportion of his apartments in regard to each other are often exceedingly happy and effective. Some have found fault with the magnificence and display which are observed in some of his façades, but here, again, we must remember for whom and with what purpose they were built. His clients were Venetian noblemen, eager to display their power and position by the erection of grandiose buildings, which he provided in his spacious columned vestibules, grand staircases, galleries, libraries and colonnades.

Palladio's architecture was essentially columnar and not fenestral, and his entablatures were proportioned to the column with which they were associated, whereas his predecessor, Sansovino, occasionally employed an entablature disproportionate to the columns as at St. Mark's Library, in which windows are placed in a deep frieze. In addition to the methods referred to, Palladio frequently used two orders of different scale in the same facade; one comprising the whole height of the building and the smaller subordinate "order" being only one-half or two-thirds of the larger one.

Columns were sometimes placed on pedestals in order to give additional height, sometimes not so. The pedestals never seem to have been decorated with panels, sunk or raised, although this feature is so treated in Palladio's book. Fluting is generally omitted from the columns as designed by Palladio, and this was probably due to the fact that they were frequently formed of brick and stucco, materials which were unsuitable for fluting in long lengths.

Palladio's knowledge of the details of ancient Roman architecture was extraordinary, yet his inventive genius was considerable, and we seldom find that he repeated any of his designs. On the contrary, his façades abound with various dispositions of the orders, in addition to which he obtained effect and contrast by the judicious use of plain and rusticated walling and the use of arcades.

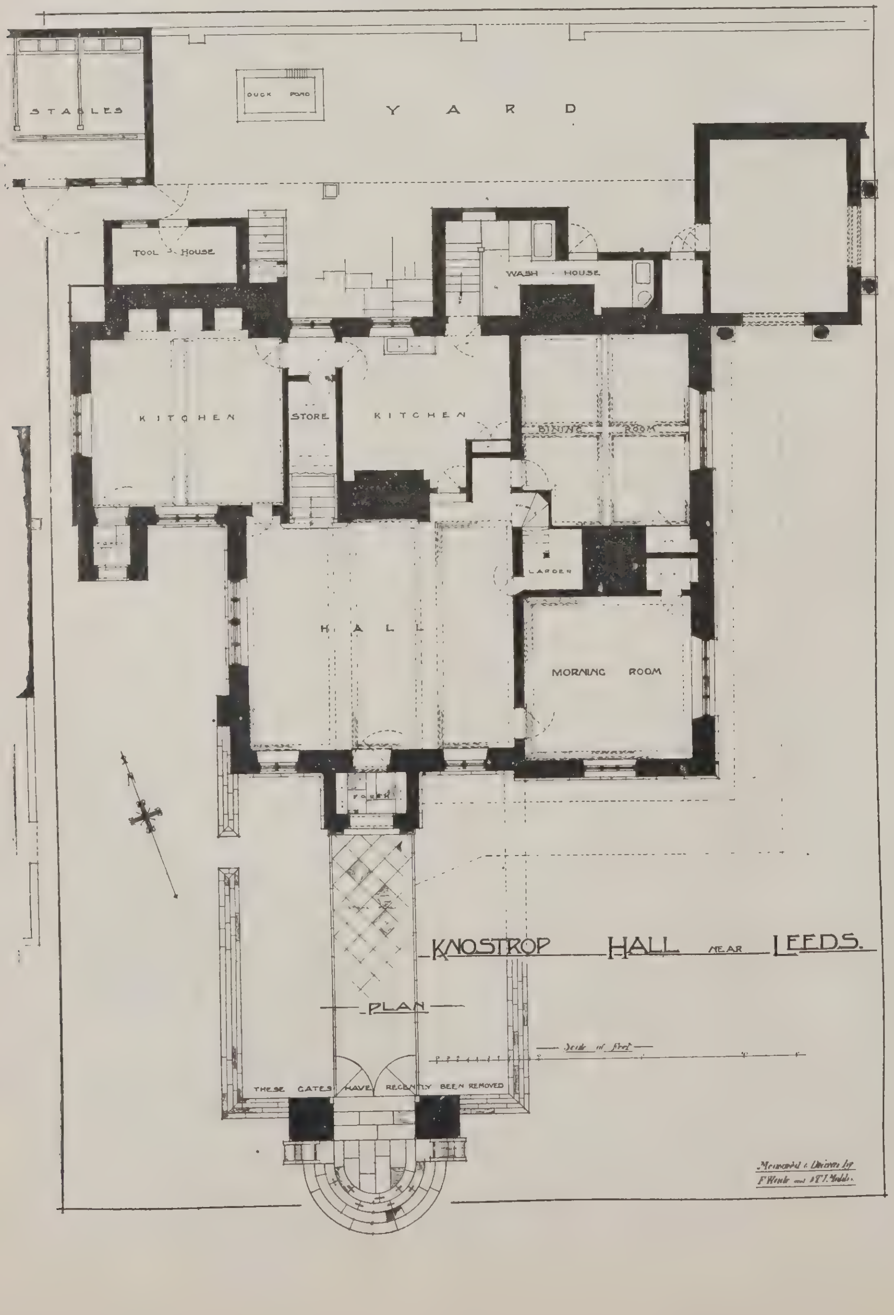
His rustication is often excellent in design and scale, and gives considerable character to his buildings, not in an excessive way, as at Florence, but as a set-off to his columns and their entablatures. In the design of his arcades and of entrance halls he appears to have preferred the larger order, embracing two storeys, with small pilasters placed behind them to carry the floor of the upper gallery.

In these arcades semi-circular arches usually rest on piers in conjunction with a trabeated arrangement adopted from ancient baths. A favourite arrangement, however, was one in which he divided the interval between two piers in three parts by small piers or columns, with an arch only covering the central aperture, a combination which seems to have been copied from some colonnades at Diocletian's palace at Spalato.

In the designs of his doors, windows and niches simplicity seems generally to have been sought after. Fewness in number and largeness in size was his aim. The openings were generally crowned by pediments, alternately angular and circular; but these were never broken—a rococo feature in which he did not indulge. On these pedimented openings he occasionally placed reclining sculptured figures, probably copied from Sansovino or Michelangelo.

The entablature to his orders is generally unbroken, but happy effects are sometimes obtained by projecting the columns beyond the main face of the wall and breaking the entablature around their projections.

In the profile of mouldings he was specially careful; the architraves and friezes were generally plain, the latter being sometimes pulvinated, and his cornices have the consoles and other ornaments carefully centred over each other.



Interior decoration seems to have been somewhat neglected, owing, no doubt, to want of funds.

Perhaps few men, with the exception of Vitruvius, has exercised more influence in matters architectural than Palladio. This was chiefly effected by means of his great literary effort, published in four books in 1570, of which countless editions have been published, and which has been translated into almost every European language. The most interesting to English students is the third edition, published in 1742, as it contains the notes by Inigo Jones taken from his manuscript in Worcester College, Oxford. Mention should also be made of the valuable Burlington-Devonshire Collection now in the R.I.B.A. Library. These drawings of ancient buildings and of his own designs are believed to be by Palladio himself. They show his careful study of ancient buildings in Rome and elsewhere, and from a perusal of them we may agree with Sir Joshua Reynolds that "the greatest natural genius cannot subsist on its own stock; he who has laid up no materials can produce no combinations. The more extensive his acquaintance is with the works of those who have excelled, the more extensive will be his power of invention."

Inigo Jones (1572–1652) was the pioneer of Palladian architecture in England, and it must be confessed that no student so thoroughly studied his master's works as he did.

Lord Burlington paid many visits to Italy, and his life there among the artists of the day seems to have given him an extraordinary liking for and interest in the works of the Palladian school. His collection of drawings by Palladio, already mentioned, and of works by other artists of the period, must have helped very much to have popularised the art of Palladio.

Giacomo Leoni was brought over to England by Lord Burlington in 1715, especially, it would appear, to help in the translation of Palladio published in that year. Remaining in England he executed a number of important buildings, such as Latham Hall, Moor Park, &c., which must have influenced contemporary architecture.

Symmetry and grandeur were the qualities which predominated in eighteenth-century architecture, due in a large measure to the disciples of the Palladian school.

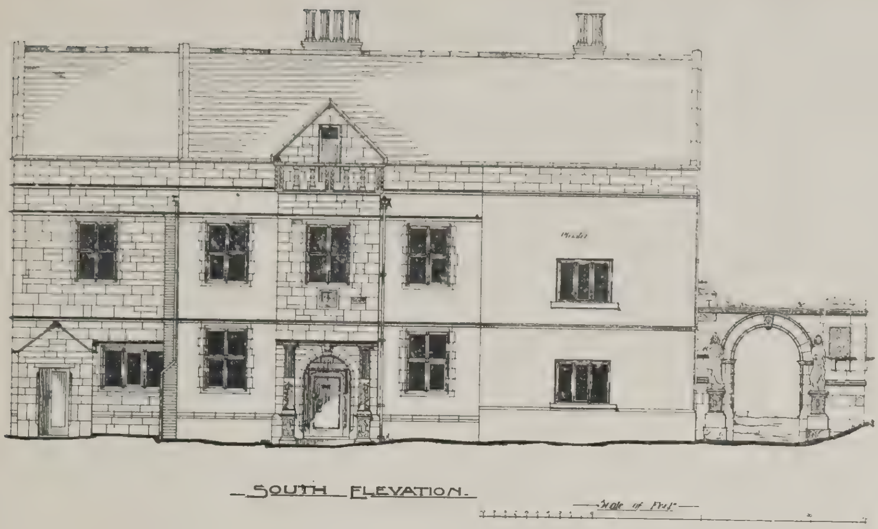
Nicholas Hawksmoor (1666–1763), Colin Campbell (died 1734), Sir John Vanbrugh (1666–1726), James Gibbs (1683–1754), Thomas Archer (died 1743), William Talman (died 1715), the Earl of Burlington (1695–1753), Kent (1684–1748), and Robert Adam (1728-1792), stand out pre-eminently as the followers of Palladio and Inigo Jones and as the developers of the truly national elements of the English Renaissance.

Sir William Chambers, by his writings, and especially his "Treatise on the Decorative Part of Civil Architecture," carried on the traditions, and objected to the Greek revival of architecture, which was then beginning to be felt.

Thus, till within a century ago, the school of Palladio and his English followers was bound up with the traditions of English architecture. In the nineteenth century, tradition being broken up, the age of revivals commenced.

A discussion followed in which Mr. Hugh Stannus, Mr. Louis Ambler and Mr. Hare took part.

The Bells of St. Bride's, Fleet Street, E.C., will be rung frequently and on all festive occasions for the future. For some years, owing to the shaky condition of the tower, it was not possible to ring them without danger, but since the tower has been reconstructed the bells have been rehung and their fittings renewed.



KNOSTROP HALL.

STRIKES.

What is Lawful and What is Not.

It is lawful for a trade union to "call out" its men in order to get rid of another set of workmen, if it is done with the intention of obtaining an advantage for the members of the union. On the other hand, where A had some men in his employ who were not members of a union, and the union, in order to punish these men for not becoming members before, refused to admit them, and induced a customer of A to cease dealing with him by threatening to call out their men in the customer's employ, it was decided that the acting members of the union were liable. Further, where A had incurred the hostilities of three trade-union societies by selling to builders who had refused to be bound by the rules of the societies, whereupon the societies refused to work for any builder upon goods bought by him from A, and so induced a particular builder who had bought goods from A to break his contract with A, it was held that an action lay.

The chief means by which pressure is brought to bear by employers are lock-outs, and by employed—strikes, picketing and black lists. Lock-outs are legal if no contract is broken, *e.g.*, to give notice to the workmen. With regard to strikes, men may combine to leave their employer if they give proper notice to determine their employment. They may strike unless he will raise their wages, and trade unions which assist them by withdrawing their own labour and declining to work, and which assist them in supporting themselves, can do so. As to picketing, it would seem that this, excepting only for the purpose of obtaining or communicating information, is unlawful. Where men where imported from Ireland during a strike to replace the men on strike, and on their arrival were met by agents of the trade union, who offered to pay their expenses if they would return, the conduct of the agents was held to be illegal.

A trade union is in the same position as a company, and is liable for the action of its agents within the scope of their authority, that is to say, it is liable for the acts of its agents done in the course of its business and for its benefit, despite any restrictions nominally placed on their actions.

In the case of a single individual it is established that it is legal for a man to persuade any employer to dismiss his workmen, however bad the motive may be, but not to dismiss his workmen without notice, unless no notice is necessary to put an end to the employment. It is perfectly legal for one workman to persuade another not to enter a particular employment, but it is illegal for him to use threats, *e.g.*, of personal violence, to the man to prevent him from entering the employment. But it it must be remembered that, if two or more persons combine to do such acts, their motive may make all the difference between legality or illegality.—(Extracts from an article in "The Chamber of Commerce Journal" for April.)

A. A. OF IRELAND.

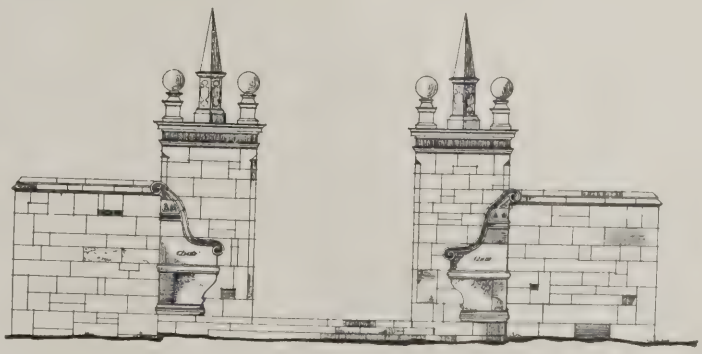
Proposed Irish Qualifying Examination.

There has been a movement during the present session amongst the senior members of this Association to endeavour to have a qualifying examination held by the Royal Institute of Architects of Ireland prior to admission to that body. After seven years' educational work it has been found that A A. members would not enter for R.I.B.A. examinations whilst entrance to the Irish Institute was such a simple matter. A deputation recently waited on the Council of the Institute, with the result that a joint conference is now sitting to discuss whether such a qualifying examination is desirable and feasible. The representatives of the Institute are Sir Thomas Drew, Messrs. W. M. Mitchell, F. Batchelor, W. Kave Parry, G. Sheridan and J. M'Carthy, and the representatives of the Association Messrs. F. Hayes, F. G. Hicks, J. H. Webb, R. M. Butler, C. H. Ashworth and H. Allberry. The matter is of much importance to the profession in Ireland in order that present educational facilities may be reorganized and increased.

WAKEFIELD CATHEDRAL.

Progress made with the Additions.

Throughout the winter the work of enlarging the cathedral at Wakefield, as a memorial to Bishop Walsham How, has gone on very steadily; it is expected that the enlarged structure will be formally opened in the summer of 1904. Over the full period of three years there will have been an expenditure of about £45,000. The same Perpendicular style, which is the predominating feature of the old church, is continued, fine Crosland Moor stone being used. The new north and south transepts are well advanced. That on the north side will soon be ready for roofing. The eastern chapel has risen as far as the window heads. Vestries are constructed on both sides, a fine chapter-house is rapidly assuming shape, a bishop's vestry is near to, and a fireproof muniment room, in which the records and registers may be deposited, has been built. Generally speaking, the enlargement follows closely on the lines of the chancel and crypt at Truro, likewise designed by the late Mr. Pearson. In demolishing the old eastern wall the workmen found several old monumental slabs or stone coffin lids. One of them is elaborately carved, the design suggesting twelfth-century work. Some remains of Norman architecture were found in the walls, and also the upper part of a niche which is supposed to have enclosed the three-quarter size effigy of William de Melton, Archbishop of York in 1329, when the church was reopened after reconstruction. The recumbent effigy of the late bishop, designed by Mr. R. L. Forsyth, is to be placed in the recess of the south transept, and just above the monument will be the stained glass memorial window subscribed for by children of the diocese. The new east window is to be given by the Fernandes family. Family memorial windows are also to be placed in both transepts. Of the total estimate of £45,000 there is about £3,680 yet to be raised before the cathedral extention can be opened free of debt. One rather vexatious cause of expense which the committee encountered was the necessity for purchasing houses lying to the east of the cathedral, and built apparently on the churchyard itself. This, with the compensation for rights of light, swallowed up no less than £8,250. Even now the cathedral suffers by the close proximity of buildings which nestled up close to the old church in days gone by and acquired prescriptive rights which in these latter days have been a veritable thorn in the flesh to those interested in cathedral development.



ELEVATION OF ENTRANCE GATES PRIOR TO REMOVAL.

KNOSTROP HALL, NEAR LEEDS

Bricks and Mortar.

Aphorism for the Week.

Prepare thy work without, and make it fit for thyself in the field: and afterwards build thine house.—PROVERBS xxiv. 27.

Ruskin. IN the course of his "Recollections of Ruskin," which he recently gave to the members of the Richmond (Surrey) Athenæum, Sir William B. Richmond, R.A., said he doubted if any artist had ever drawn architecture with more feeling than Ruskin. He had a most refined sense of form, and as a colourist he was no less remarkable; but it was strange that the inventive faculty as applied to drawing and painting did not appear in his works of art. As he once observed, "I have no power to design; I can only draw what I see." Dealing with Ruskin's strictures on the art of Michael Angelo, Sir William pointed out that Ruskin's mind was cast in the lyric, not in the epic, mould. The weakest part of Ruskin's work was where he dealt with human emotions; his enthusiasm, while it was strong, did not include the tragedy of life. Yet in a sense this limitation was his strength. In its relation to art Ruskin's mind was like the microscope; it was Aristotelian, not Platonic; he worked from the small to the great, not from the great to the small.

Scotch Castles. IN his third Rhind lecture at Edinburgh Mr. Thomas Ross, architect, proceeded to trace the progress of castle-building in Scotland during the Mediæval period. William the Conqueror secured and held his position, he said, by his rapid movements, and by the construction of temporary castles of timber and earth. Few castles of stone and lime were erected till about thirty years after his death, and most of the Norman keeps in England were built between, say, 1120 and 1180. These castles were built by the usurping Norman lords to defend their conquests, and were thus the outcome of circumstances which did not arise in Scotland. David I., whose reign of thirty years occupied most of the Norman keep-building period, had no need of Norman castles to overawe his subjects; and the many Norman families who then came to Scotland appear to have met with little opposition. David was a great church-builder, not a castle-builder, and during the twelve years' reign of his son, Malcolm, the country being then in a state of comparative peace, Norman castles were not required; thus it came about that there were no such castles in Scotland, so that the first period of stone castle-building in England was a blank in Scotland. But as a modified kind of Norman keep ultimately came to be a favourite with the nobility of this country, the plan and arrangements of Norman keeps were explained. Considerable light was thrown on the early castles of Scotland by the Bruce and Wallace; and when built of stone, this circumstance was always emphasized so as to distinguish them from castles built of "tre." It was evident that it need not be assumed that a reference to a castle in the twelfth century in Scotland meant a stone-built structure—the probability being that it did not—and not perhaps till the thirteenth century did stone castles come to be erected in Scotland, and of the type which succeeded the Norman keeps in England, known as Edwardian castles. These were the castles of the first period, and might be briefly described as strongly fortified camps defended by stout lofty walls and towers. Castles of this type were built in great numbers throughout the West Highlands and Islands, and had been vaguely written about as of Scandinavian origin, but they quite agreed in principle and detail with the Edwardian castles of the mainland and of England, so they were Scottish castles.

The new Khartoum. THE special Soudan correspondent of the "Standard" has forwarded an interesting account of the new Khartoum. He says that considering three years ago Khartoum was nothing more than a dirty dust-heap, the work that has been accomplished by the Royal Engineers is truly wonderful. Of course the city is still in the hands of the builders; everywhere are gangs of workmen levelling roads, preparing foundations, making bricks of Nile mud, carrying, hammering, digging, building. Women, too, are employed. Their principal duty is bearing water for the lines of young trees that will one day make each street a shady avenue. Already the town is lighted with lamps far better than in many an Egyptian city, and it is hoped that six months more will see a tramway in working order.

The Doctor and the Architect. INSPIRED by a leading article in the "Times" in which it was observed that many a doctor or architect had found his professional life to consist of two periods—one in which he was too young to be trusted, the other in which he was too old to be efficient: inspired by this observation, appeared some verses in "Punch"—

Two men there dwelt upon a time
Within a certain city.
Both were distinctly men of parts
Well versed in their respective arts.

To fell diseases of the kind
That everyone who can shuns
One of the pair had turned his mind,
The other's forte was mansions.
They were, as you'd no doubt expect,
A doctor and an architect.

The latter, when but twenty-nine,
Planned a Titanic building,
A house of wonderful design,
All marble, stone and gilding.
Said he: "My fortune's made. I wis,
Men can't resist a thing like this."

With eager hope his heart beat high,
He took his plans up boldly,
And thrust them in the public eye:
The Public viewed them coldly.
"Pray take that rubbish right away,
You're far too young for us," said they.

The doctor's turn came next. His was a novel treatment for consumption, but the public sternly rejected it also —

Apparently you quite forget
That you are barely thirty yet.

The years rolled on, but the hapless pair found life no whit the gayer.

And then—the Public changed their mood!
Their hearts began to soften.
They felt the doctor's cures were good—
(They'd had that feeling often).
They also chanced to recollect
The merits of the architect.

"Come plan us mansions, bring us pills."
Their cry no answer rouses.
No one alleviates their ills,
No one designs them houses.
Upon enquiry it appears
Each has been dead for several years.

Sculpture and Painting. PROFESSOR ANDERSON, of University College, Sheffield, lectured recently on the relations of sculpture and painting. The object of the lecturer was to bring out the fact that sculpture reached something like perfection long before even moderate skill in pictorial representation, as we understand it, was obtained; how sculpture affected painting at every step, and how in turn painting reacted on sculpture. In Egyptian drawings, for instance, there is no idea of proportion, perspective, or the right relations of the objects depicted to one another; with a wonderful skill in draughtsmanship and often irreproachable decorative feeling, the artists nevertheless produced only graphic diagrams. Many of these productions, however, are charged with symbolic meaning in every detail. It was much the same in Assyrian art, only here, as the medium was usually low-relief clay modelling, the direct influence of the sculptor's art was sooner seen. In Egypt the only available stone was the exceedingly hard and intractable porphyry, in which the figures are always stiff and unnatural; but when the sculptor was content with wood he readily produced the most natural and life-like figures. Early Greek pictorial art was shown to have a distinct relation to Egyptian and Assyrian, but to have rapidly outstripped it under the influence of the marvellous talent of the Greeks for sculpture; though here also sculpture was seen to be in advance of the graphic art. The invention of bronze casting had a wonderful effect in freeing the Greek sculptors for the development and expression of ever bolder ideas: while both in bronze and marble they reached the perfection of skill in the representation of living and moving forms. Professor Anderson, in conclusion, showed how progress in art was a perpetual striving to pass out of the bounds of convention into freedom, and how in art, contrary to the case in morals, methods and materials must be accounted as nothing provided the result is good. In art any method or any lack of method justified itself if the artist's productions were good.

Spoiling Canterbury Cathedral. MR. RALPH THOMAS objects to the mural tablets on the north wall of the nave of Canterbury Cathedral, condemning them as hideous cemetery masons' tablets with large black borders which do not harmonise with the surroundings. "The Hales (1496) and Boys (1612) bays are delightful, though we could dispense with the commonplace Turner tablet. The next bay has three 'magnificently polished' white marble tablets, with 'ditto black borders': the dates are 1835, 1838 and 1846. Nothing in the cathedral is in viler taste than this bay except those which follow it with their ugly monuments, forming a frightful background to the lovely altar tombs to Archbishop Sumner and Archdeacon Parry. The further bays are at present free." Finally, he regrets to observe the ruthless manner in which the original stonework of the cathedral is cut away to make room for modern monuments.

In the Cotswolds. THE Architectural Association of Ireland held a meeting last week. Mr. F. G. Hicks, president, occupied the chair. Mr. Guy Dawber, F.R.I.B.A., lectured on "The Stone Buildings of the Cotswolds." He said the Cotswold district comprised about 300 sq. miles of undulating country, and contained numbers of most interesting and characteristic examples of domestic architecture. They did not find much of this domestic architectural work earlier than the sixteenth century. During the reign of Queen Anne, when the commercial classes became a power in the country, many of the old Royalist families who had suffered by the Civil War and afterwards by the reckless extravagance of the Restoration were compelled to sell their estates and migrate to the towns. The estates were bought by the wealthy merchants, and this might to some extent account for the want of variety in the style of the houses. The domestic buildings at the beginning of the seventeenth century varied but slightly. The old Cotswold builders managed to get the most delightful effects out of very simple plans of buildings. He showed some peculiarities of arrangement of the stone slates with which the houses were roofed, and said that nothing was attempted in the way of workmanship that the local people could not do themselves. Very little change was noticeable from the sixteenth to the eighteenth century, as the people showed a disposition to cling to old methods, and to think that what was good enough for their fathers was good enough for themselves. Notwithstanding this fact, however, there was a good deal of individual variety in buildings raised even on the most simple plans.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

New Flooring Materials.

LEYTONSTONE.—ENQUIRER writes: "Where can floors of 'Eubœolith' and 'Papyrolith' be seen in or near London?"

Probably the makers could themselves give you the information you require, and refer you to floors already laid down; but the fact that both Eubœolith and Papyrolith are new is evidence that they have not been much used, so that a certain amount of risk must be run in using them. To judge from samples is all that can be done. They appear to be suitable for bathroom use, but we have no data upon which to pronounce a definite judgment. G. A. T. M.

Constructional Ironwork.

LONDON, S.W.—STEELWORK writes: "I shall have in hand presently some heavy building work for India (power-stations, &c.) which has to be substantial, but low cost is essential. Where can I find information on the subject? Various and comparative trade prices and a few detailed drawings would be of value to me."

For heavy work in power-stations, &c, a specialist should be consulted, particularly if economy and safety are to be combined. "Specification, No. 6," contains some information, but the best periodical for drawings and details is the American paper called "The Engineering Record," published weekly at 114, Liberty Street, New York. Annual subscription 6 dols. Parts I. and II., 2nd series, Designing Ironwork (E. & F. N. Spon, Ltd., 125, Strand, W.C., 1s. 6d. and 2s. 6d.) will be found useful.

HENRY ADAMS

Buildings to Measure at Horsham, Epsom and Kingston.

(1) HORSHAM.—STUDENT writes: "Kindly mention any Gothic work in the neighbourhood of Horsham suitable to measure for the R.I.B.A. examination."

(2) EPSOM.—H. F. writes: "Please name some suitable buildings within a radius of ten miles of Epsom suitable to measure for the R.I.B.A intermediate examination."

(3) KINGSTON-ON-THAMES. — STUDENT writes: "Are there any churches within easy reach of Kingston suitable for me to measure for the R.I.B.A. final examination?"

(1) Horsham Church, mainly Early English in style with some Perpendicular additions, appears to be a particularly fine structure; but there is not much else of value for the purpose named within easier reach than Chichester Cathedral, where a few weekends might be very profitably spent. Before going there, the Dean's permission to sketch and measure should be obtained.

(2) The church at Leatherhead is principally of fourteenth-century date, the nave piers being perhaps a little earlier, while Banstead Church, of flint and stone, is chiefly Perpendicular, with some small Early-English windows in the church. There is also a little thirteenth-century work left at Carshalton. All these are within a radius of 10 miles from Epsom, and from among them suitable subjects could doubtless be selected.

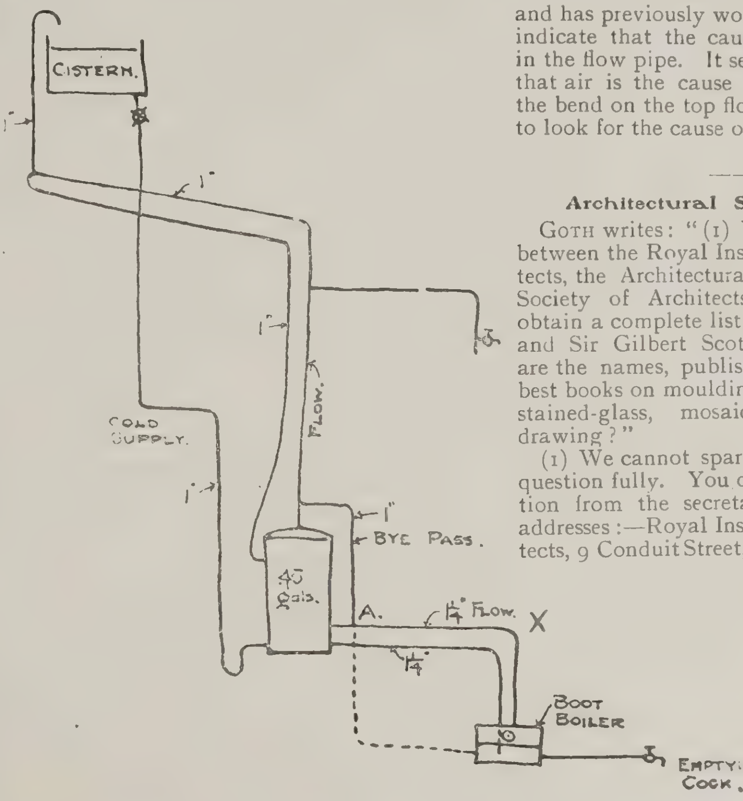
(3) Possibly the Perpendicular church of Thames Ditton would be suitable, or the chancel of Merton; but it would probably be better to spend a few week-ends or a longer holiday in a cathedral city, there being nothing of real importance in the neighbourhood. G. A. T. M.

Hot-Water Apparatus.

HULL.—B. W. writes: "The accompanying sketch shows the hot-water apparatus recently installed in a country house. The system has proved efficient in every way except that the pipes knock at or near the boiler. The plumber offers to stop the nuisance by disconnecting the bye pass pipe from the flow pipe at A and connecting it to the boiler as shown by dotted line. He declares that there are no traps in the system where air can collect, and asserts that he has cured similar cases by this method. The flow pipe does not dip at all into the boiler. I shall be glad to have your opinion on the matter."

It is practically certain that the pipes are too high at the bend where I have marked a cross on the sketch, and that there is consequently an air trap there, or else that there is an obstruction in one of the pipes between the boiler and the cylinder. I do not see how the alteration that the plumber suggests can effect a cure, but if he can show actual instances it might be tried. Even in that event, however, it would be unnecessary, because if the pipes are clear with a continuous rise between boiler and cylinder the water will circulate without noise.

G. A. A.



KIRKCALDY.—D. F. S. writes: "Adverting to the reply to 'Liverpool' in your issue for December 24th last, regarding hot-water supply, it strikes me that none of the systems can work properly. I should feel obliged if 'G. A. A.' could explain by what principle the water in the return pipe from the hall radiator finds its way back to the kitchen boiler, seeing that the pipe dips underneath the floor and has to rise up again."

As to whether any of the systems would work properly, until one or more is tried, can only be a matter of opinion. The principle by which the water in the return pipe from the hall radiator finds its way back to the kitchen boiler is the same as causes water to circulate in any hot-water system, and will be found fully explained in any treatise on the subject. The fact that the pipe dips so slightly would cause no serious difficulty. The most of my hot-water experience, as well as my experience of steam heating, was gained in the United States, and it was very usual there to run the return pipe under the floor when the last fixture supplied was on the same floor as the boiler. G. A. A.

LONDON, S.W.—INSURED writes: "What is the cause and remedy for noises in a hot-water system—supply from boot-boiler at back of kitchen range to hot-water tank in roof fed from cistern? The pipes serve lavatories, baths and a hot-water heater satisfactorily, but at night noises are heard in the pipes to the hot-water tank, which is about 25ft. above the kitchen range. There is no safety-valve on the pipes, except the usual vent pipe direct from the top of the hot-water tank to the outside of the roof. There is also a tapping on the top floor (where there is a bend) when hot-water is drawn from this lavatory during the day."

If this is a new system and the pipes are all clear there are most likely air traps in the pipes, that is, the rise from boiler to tank is not continuous. If it is an old system and has previously worked silently it would indicate that the cause of noises is deposit in the flow pipe. It seems from the question that air is the cause of the noise and that the bend on the top floor is one of the places to look for the cause of the trouble.

G. A. A.

Architectural Societies; Books.

GOTH writes: "(1) What is the difference between the Royal Institute of British Architects, the Architectural Association and the Society of Architects? (2) Where can I obtain a complete list of the Pugin's, Street's and Sir Gilbert Scott's books? (3) What are the names, publishers and prices of the best books on mouldings (especially Gothic), stained-glass, mosaic and architectural drawing?"

(1) We cannot spare space to answer this question fully. You can obtain all information from the secretaries at the following addresses:—Royal Institute of British Architects, 9 Conduit Street, W.; the Architectural Association, 56 Great Marlborough Street, W.; and the Society of Architects, St. James's Hall, Piccadilly, W. (2) In the catalogue to the library of the Royal Institute of British Architects or the British Museum. (3) For mouldings see Pugin's works on Gothic architecture and J. K. Colling's "Details of Gothic Architecture" (published by B. T. Batsford, £2 2s.): methods of delineating them are given in Spiers's "Architectural Drawing" (Cassell & Co., Ltd., 10s. 6d.); "Windows a Book about Stained and Painted Glass," by Lewis F. Day (B. T. Batsford, £1 1s. nett). We know of no recent English book dealing adequately with mosaics. We advise you to consult several recent papers read before the Royal Institute of British Architects, and published in their journal, and "Specification, No. 6." For a book on drawing get Spiers's, referred to above.

Acquirements of a Pupil.

NEWCASTLE-ON-TYNE.—J. M. G. writes: "What reasonable acquirements should a pupil have attained after completing his three years' articles?"

He should be a neat tracer and able to prepare simple drawings from rough sketches and to read plans, and should be able to design very simple buildings, such as cottages and stables. He should have a thorough text-book knowledge of construction and a knowledge of office routine; should be able to sketch well and set up perspective in outline, with correct shadows.

Hydraulics.

NEWPORT (MON.) – H. T. writes: "Kindly recommend a good book on Hydraulics, suitable for preparation for the A.M.I.C.E. examination."

"Hydraulic Power and Hydraulic Machinery," by Henry Robinson (Charles Griffin & Co., price £1 14s.).

Wrought-Iron and Steel Stanchions.

LONDON, N.W.—N. K writes: "Is there any book dealing with the design of wrought-iron or wrought-steel stanchions, giving suitable formulæ for calculating their strength? Hodgkinson's and Gordon's formulæ seem only for cast-iron columns, and Professor Adams in his book on the 'Practical Designing of Structural Ironwork' only includes cast-iron stanchions and pillars. They are so often made now in wrought iron or steel."

See the articles on "American Steel Construction" in "Specification," Nos. 4 and 5.

Finishing Walls to Fives-Court.

LONDON S.W.—E. B. M. writes: "How should the brick walls to a fives-court be finished?"

The joints should be scraped out to a depth of one inch and the wall rendered and floated with one coat of Portland cement (1 part) and clean sharp sand (2 parts), and finished with neat cement or half cement and half sand, $\frac{3}{8}$in. or $\frac{1}{2}$in. thick, trowelled to a smooth surface, this latter following on the first coat before it is dry, and the work done in sections to provide against slight expansion to which cement is liable.

Bending Moments for Beams.

NEWCASTLE-ON-TYNE—STUDENT writes: "What are the formulæ of bending moments for beams loaded as follows:—Beam fixed at one end and loaded at other, beam fixed at one end and uniformily loaded, beam fixed at both ends and loaded at centre, beam fixed at both ends and uniformily loaded?"

See an answer to an enquiry on p. 409 of our issue for June 26th, 1901.

Exposed Woodwork.

LONDON.—M. E. writes: "In order to comply with the local by-laws, the half-timberwork in the gables of a house recently erected was constructed of 1in. deal boards nailed to the brickwork. These boards were given two coats of hot Stockholm tar. The house faces due south and is in an exposed position. In two years the weather has removed practically the whole of the tar. Can you suggest a remedy by which the boards can be made to retain the colour of real half-timber work?"

Stockholm tar will not retain any "face" on fir—at least not for any length of time. The best that can be suggested is to stain the framing with burnt umber in oil, and then to varnish with an elastic, outside, copal varnish. The only alternative is paint—preferably varnish colour. H. E.

Lens for Examining Samples: Rough Cast.

LARGS.—A. L. writes: "Kindly describe a lens suitable for examining samples of stone, sand, &c.; also the method of applying cement rough-cast to brickwork."

There are any number of makers of optical instruments who supply a suitable lens, and it would be invidious to mention any. We advise you to get a microscope with two or three powers, the greatest being one magnifying up to 100 diameters. Rough-cast is applied to brickwork with a wood shovel-shaped implement. Often only the finishing coat is applied in this way, the first coat being composed of smaller stones and applied in the ordinary way with trowels. The rough-cast should be composed of 3 of aggregate to 1 of Portland cement matrix.

The Building Trades' Exhibition.

LOUGHBOROUGH. — INTERESTED writes: "Will there be a building trades' exhibition this year?"

Yes. It will be held at the Royal Agricultural Hall, Islington, from June 13th to 20th.

Plaster Cornices.

ALLOA.—STUDENT writes: "Please recommend a cheap book on plaster cornices for plain and cove ceilings, illustrated by detail sketches. I have seen Miller's book on plastering, but it is not what I wish."

We do not know of any book such as you require. Kemp's "Practical Plasterer," though illustrated, is not what you want.

Concrete Floors.

WINDERMERE.—R. W. writes: "Would a concrete floor for a private house formed with **I**-shaped main joists, and **T**-shaped minor joists, put 2ft. 6in. apart with 6in. or 7in. of concrete, be an expensive form of floor and less likely to cause disturbance to a room below than ordinary joists and boards? I propose to insert 3in. by 2in. scantlings in the concrete for fixing flooring to. Would it be well to leave a space of about 1in. between the boards and concrete, or should the boards be put down on the concrete with a composition to prevent decay?"

The form of floor you propose would be considerably more expensive than an ordinary timber one and would allow almost as much sound to pass though. A wooden floor protected by a slag-wool slab ceiling with slag-wool filling would be far better. If concrete is adopted it should be tarred first and the boards laid direct on it, nailing to wood fillets as you propose.

Pargeting.

SHEFFIELD.—A SUBSCRIBER writes: "What should be the proportions in making dung mortar for pargeting a chimney flue? Kindly name a small book containing useful information for builders."

Pargeting is made of 1 part of lime and 3 parts of cow-dung free from litter. It should be used fresh. Hurst's "Architectural Surveyor's Handbook," 4s. nett (Spon). A larger work which you should possess for reference is "Specification, No. 6." A series of seven articles on "Building Notes and Memoranda" was published in our own columns last year.

Roof-Truss to Carry Top Floor.

HARROGATE.—DOUBTFUL writes: "Is the construction shown by the accompanying sketch (not reproduced) proper for a warehouse floor having to carry oats, corn, &c, columns being dispensed with on the floor below, which is used for storing hay, &c., thereby putting the weight of the top floor on to the principals? What dead load should a floor so constructed safely carry? If each principal were further strengthened at each queen-post and tie-beam by the additions shown, what extra load would the floor carry, and is there any other better means of strengthening than this?"

The weakest part of this roof-truss would be the foot of queen-post if held by plain strap as shown on one side. A double 1in. tie-rod with $1\frac{1}{8}$in. screwed ends, strap over principal rafter and plate under tie-beam, would greatly increase the strength. If the tie-beam is made 12in. by 6in., tie-rods added as above, and the other parts as shown, it is estimated that the floor would be safe with a distributed load of 2 cwt. per ft. super., which would mean one tier of sacks only. The coach bolt into the foot of the king-post through the straining beam is useless as shown, as the thread will not hold in end grain. This should be a bed bolt, *i.e.*, a bolt with the nut let in the side of the king-post.

HENRY ADAMS.

The Design of Flats.

EDINBURGH.—L. W. writes: "Is there any publication or magazine article, &c., on the planning and management of high-class 'mansions'? What average number of rooms to each house has been found most suitable?"

I know of no publication dealing with the planning and management of high-class "mansions." In the pages of "Flats," "an illustrated paper for owners and occupiers and all interested in flats and maisonettes" (published by the proprietors, Messrs. Robins, Snell & Terry, 95, Victoria Street London, S.W.), many illustrated articles have appeared during the past few years dealing with the largest of the flats and residential hotels in the metropolis, together with one or two special articles on Parisian flats; and these might be referred to with advantage. Artillery Mansions, Moscow Mansions, Sloane Gardens House (ladies' residential chambers), Hyde Park Court, St. James's Court –these and a dozen others are types of flats mansions where tenants are catered for and valeted and the servant problem finally solved. Plans of these and many ordinary flats buildings could, I believe, be obtained from the proprietors of "Flats." The best letting suites in London contain from two to three reception rooms and three to five bedrooms, with office and servants' apartments added. In the larger suites there should be at least two rooms for servants' bedrooms, and these should be relegated to that portion of the suite containing the offices, but, at the same time, should have no communication with them. There are many very excellent buildings in London the planning of which is spoilt by the servants' bedrooms leading direct from the kitchen. I know even of a building where the servants' water-closet and the larder form one apartment; but this is, of course, exceptional. You cannot do better than obtain plans of some of the best buildings, evolving after a careful consideration of these your own perfected scheme. It is certainly strange that the literature of architecture should contain no work on buildings of this class. A paper on "Flats; Past, Present and Future," was read by Mr. Leonard J. Snell before the Auctioneers' Institute on November 14th, 1900. A paper upon the planning of flats was read before the Sanitary Institute about four years ago and was published in their proceedings. And a paper on "Flats" was read by Mr. E. T. Hall before the Architectural Association on January 18th, 1901, and published in THE BUILDERS' JOURNAL for January 23rd.

B. W.

Cesspools.

FREEHOLDER writes: "In an urban district having no drainage scheme the following is the by-law relating to cesspools: 'Every person who shall construct a cesspool . . . . shall construct such cesspool in good brickwork in cement and with a backing of at least 9in. of well-puddled clay, &c.' As a matter of fact, this form of cesspool is never used in the district. The form of cesspool which is always used—with the approval of the sanitary authority—is a well sunk about 25ft. or more deep into the chalk lined with brickwork built dry—thus known as the soak-away dumb-well system. I propose to open up an estate. (1) Am I legally safe in using the soak-away dumb-well system? (2) Can the Local Government Board object? (3) Can adjoining owners object? (4) Can other ratepayers object. If after dumb-wells are constructed, and either of the above do object to the use of dumb-wells, (5) what is my position, and (6) what is the position of the sanitary authority who approved such a questionable form of construction?"

(1) Hardly. You do it at your own risk, unless the local authority has a saving clause which enables it to modify its by-laws in

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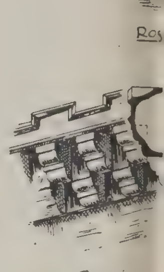
Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, April 8th, 1903.

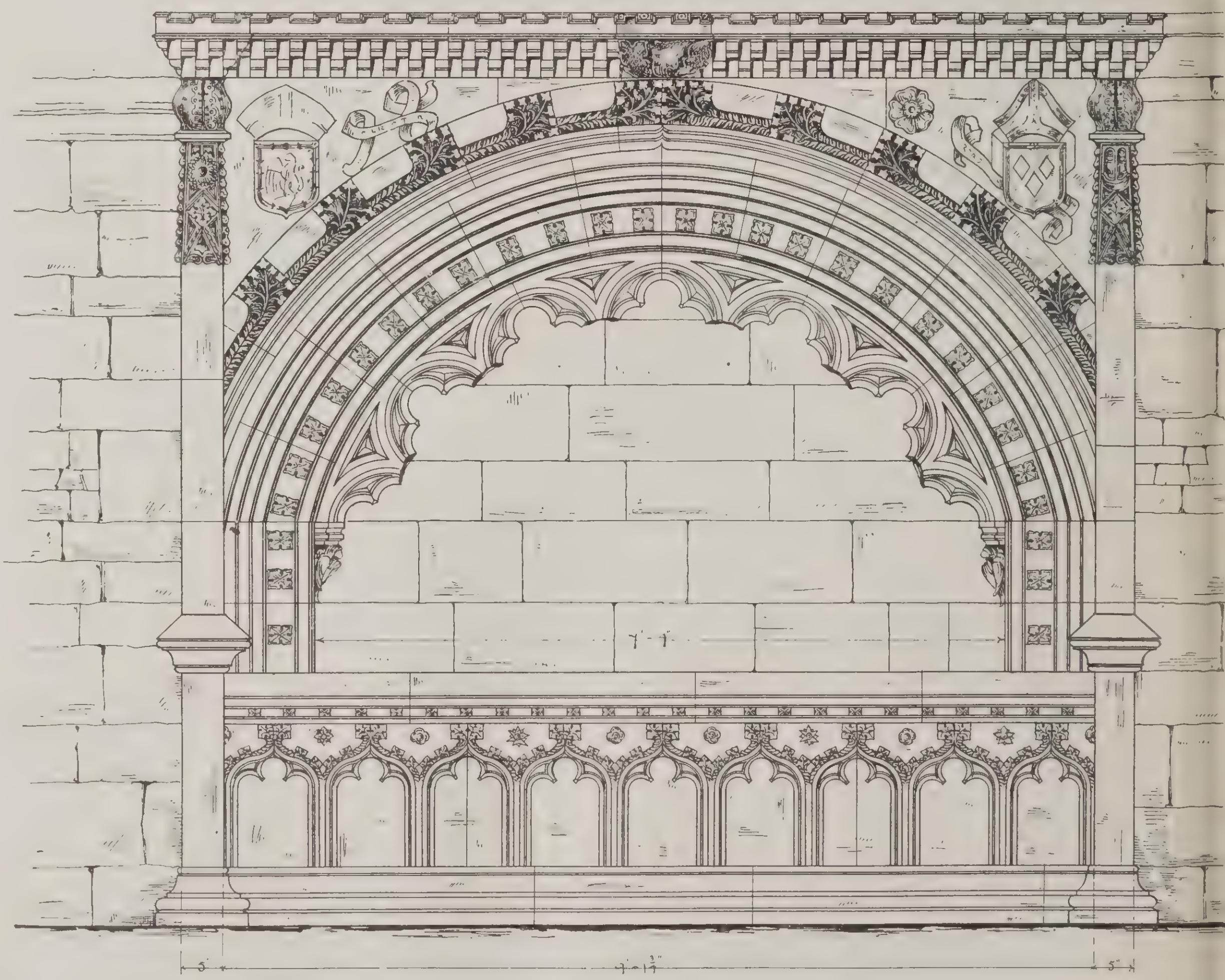
TOMB · OF · BISHOP · GAVIN · DUNBAR

South · Transept · Saint · Machar's · Cathedral · Aberdeen

Note — The tomb is built in the south wall of the ruined transept and is in a good state of preservation the cusp points only being broken away. The cornice is in a particularly good state of preservation. The base is at present below the surface of the ground which alters the general appearance greatly. In the left spandral are the arms of Scotland & in the right those of Dunbar. Dunbar was a celebrated bishop of Aberdeen. One of the principal Architectural features carried out under his supervision was the completion of the two Western towers & build the South transept of the Cathedral in 1522. He died ten years later in 1532.

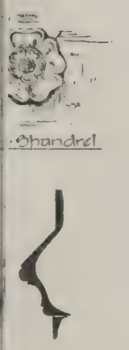


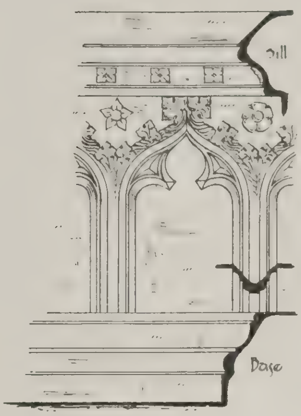
Cornice

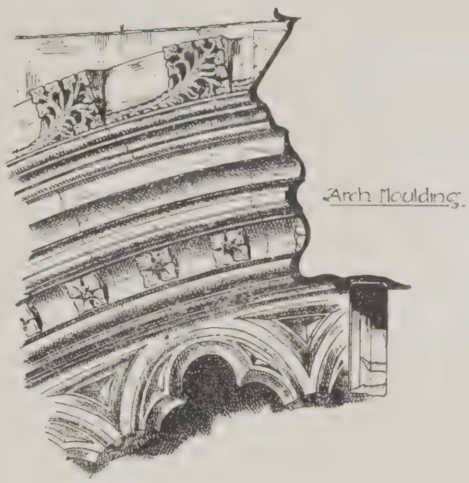


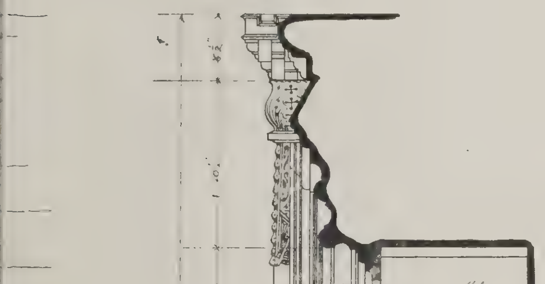
Elevation

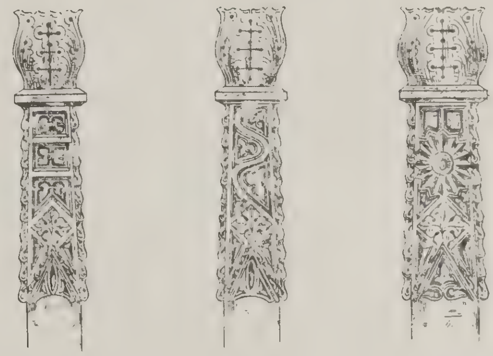
MEASURED AND DRAWN



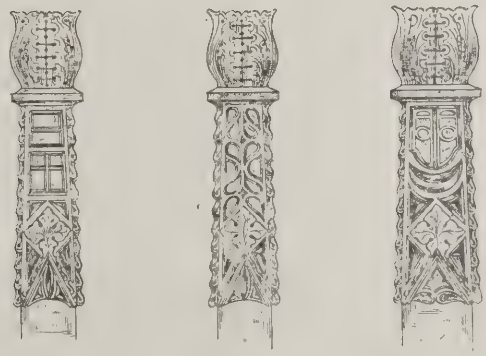








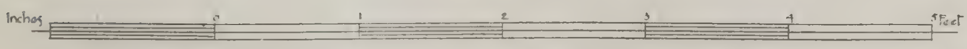
Left · Hand · Pinnacles



Right · Hand · Pinnacles

Section

Scale · for · Details · Etc



R. F. JOHNSTON.

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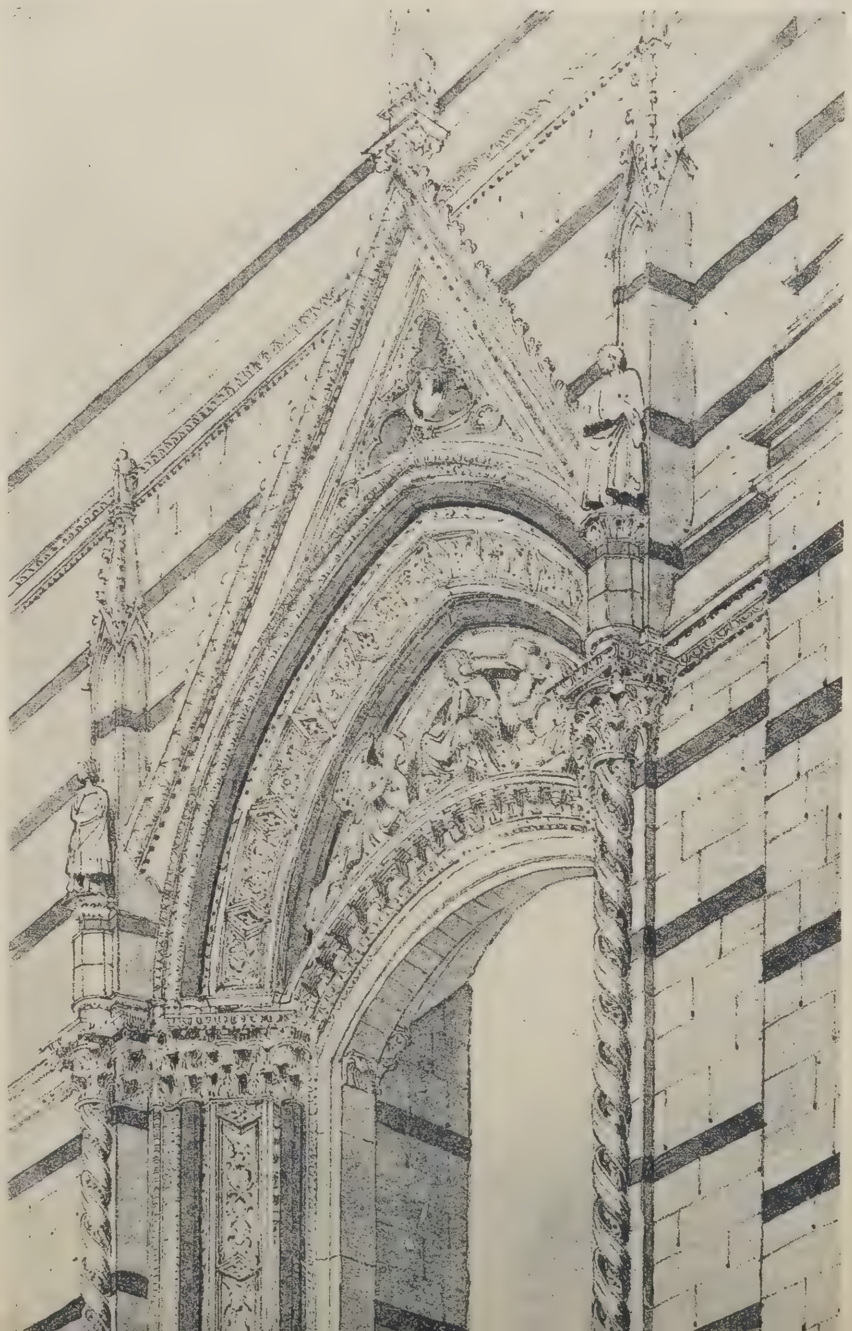

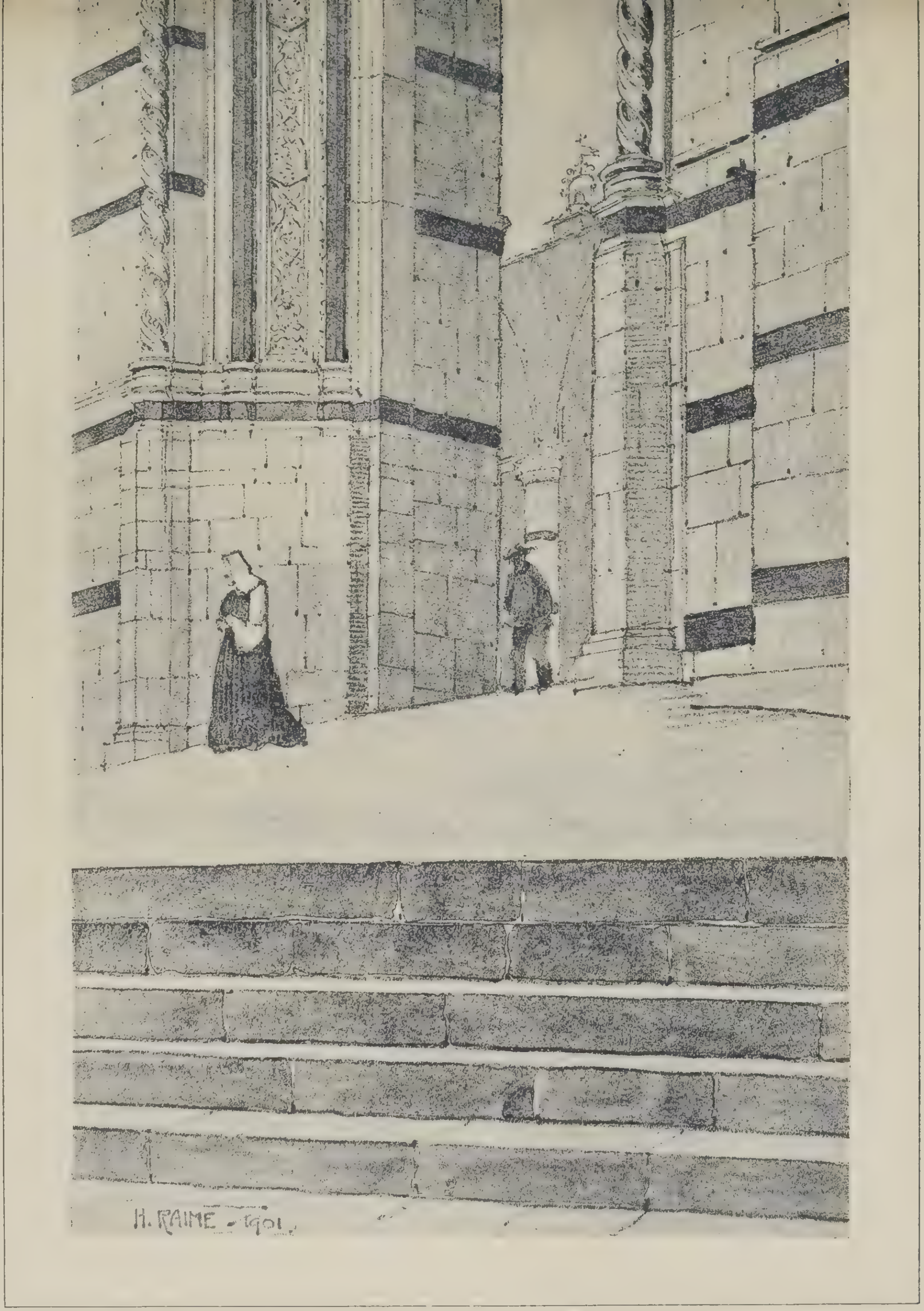
H. RAINE - 1901.

"INK-PHOTO," R. J. EVERETT & SONS, 56 LUDGATE HILL, E.C.

DOORWAY TO SIENA CATHEDRAL. DRAWN BY H. RAINE.

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dministration. (2) Yes. (3) Yes. (4) Yes. 5) You would have to reconstruct in accord nce with the by-laws. (6) You could sue t for the cost of such reconstruction; but he result is very problematical. See answer o question (1). *Generally:* Is it worth while o initiate such an extremely insanitary ystem, remembering your own and your lient's interests? The soak-away system oisons the surrounding ground, and is exremely prejudicial to wells and water-sheds; nd, if we are not misinformed, the water uestion in your district is somewhat acute urther, why construct such an enormous esspool? Is it meant to serve several houses? f you drain several houses into one pipe eading to a cesspool you create a sewer hich the local authority (being bound to aintain) will, naturally, oppose. If you ave a cesspool for each house, one 12ft. deep y 10ft. in diameter will be sufficient size. should be cleared at least twice a year. water-tight cesspool is practically a septic ank, and aërobic bacterial purification takes lace in it.

CONTINENTAL NEWS AND OPINIONS.

[The following extracts have been transated for The Builders' Journal from the erman and Russian press.]

Fires and Soot.

In the German town exhibition to be held his year in Dresden a special section will e devoted to protection from fire and soot. t will include fuel, fireplaces and apparatus or the reduction of soot or smoke, regulating pparatus, and apparatus for receiving and emoving soot, &c.

Iron for Buildings in Russia.

The Russian Finance Minister, M. de Vitte, has been making exhaustive financial eports to the President of the Russian echnical Society, saying, *inter alia*, the rotection system as applied to the Russian etallurgical industry has already led to his point, that the price of the most imporant product, iron, has reached such a low evel that it may now be extensively and rofitably used for building purposes. He proeeds to say: "When we consider the buildg situation in Russia, it appears as though e builders were afraid of iron and would se nothing but bricks and wood. This was omprehensible when the price of iron, say fteen to twenty years ago, was very high; ut we may now hope for a much more xtensive use of this metal in buildings," and e finally adjures the Society he addresses to all a special congress to take the initiative pressing the question forward. He then dicates how he thinks the congress should e composed; and as such an invitation is ntamount to a command in Russia we are ot surprised to read from the "Russische-eutsche Bote" that the Society most wilngly adheres to the Finance Minister's ggestion, and has appointed a committee give effect to it.

A Well-Conceived Competition.

The Academy of Fine Arts in Berlin holds ery third year a competition of a peculiar nd. Only Prussian architects are admitted it, and candidates must not have passed eir thirty-second year. Persons qualified der these conditions are required to submit ans, elevations, perspective drawings, secons and photographs of some building tirely carried out from their designs and der their direction. These documents are spected by a jury, which awards to the thor of the best a prize, consisting of the m of 3,300 marks, which the winner is liged to spend in a year's travel and study, his discretion, the only restriction being that, unless he is familiar with Italy, he must spend a part of his time in that country. As the prize is awarded only once in three years, it does not constitute a very heavy drain upon the resources of the Academy, while it affords a valuable stimulus to young architects to study their early work to the utmost in the hope of winning such a distinction.

Trass Cement.

In the dams hitherto carried out in the Rhenish province and Westphalia, and also in the weirs of Lauchensee in the Vosges, trass-lime cement has been used in the proportion of 1 part of lime to 1½ parts of ground trass and 1¾ parts of sand. The peculiar properties of trass mortar—its slow setting and its elasticity—make it very valuable. It may be left for days, should building be interrupted by rainstorms, and still be serviceable, and its elasticity when set allows expansion and contraction of the finished work without cracks.—("Centralblatt für Bauverwaltung.")

Cement Works in Russia.

About ten years ago the cement industry in Russia was very insignificant. In the southern part there was only one factory, that of the Black Sea Company, at Novorossisk. This was a German enterprise, and its output was never more than 30,000 barrels. The Black Sea Company may be said to have had a monopoly and the price it got (over five rubles per barrel) finally attracted competition. The metal and mining industries increased very largely in the district served by the cement company, and the demand for cement increased in proportion, so that it was possible to profitably import foreign cement. About the end of 1896 a French company started a factory about 22 miles distant in the direction of Batoum. This example was soon followed by others, and in 1898 the Black Sea Company, which had stood alone for seventeen years, had eight new competitors. Notwithstanding the extraordinary increase in the demand for Portland cement, which rose from 400,000 barrels in 1896 to about 1,500,000 in 1901, the greatly increased production brought down prices to such an extent that, in 1900, the older factories paid no dividends and the others suffered severe losses. Some of them had to go out of business entirely. In order to prevent further lowering of the price an association of cement manufacturers has been formed. Whether this will do any good remains to be seen. The bigger concerns will probably be able to stand. There is no lack of raw material, and fuel and labour are cheap. Attempts will be made to reduce expenses, and to this end the casks, which were brought from Poland. will be made on the spot, as wood is plentiful. In this way it is hoped that the industry will develop in a satisfactory manner.—(Th. Ind. Z.)

The Imperial Testing-Station at Berlin-Charlottenburg.

The "Praktische maschinen Konstrukteur" gives a full account of the operations conducted by this testing-station during 1901, and a few figures showing what was done with building materials will illustrate the imperial care devoted to such matters in Germany. In the first place, it is noted that the station grows yearly in favour. During the year in question 32,580 tests were made, against 31,982 tests in the preceding year. Some of these were carried out at the request of foreigners. Of the 1901 tests, 20,391 were of binding material; 12,189 of various kinds of stone. Amongst the roofing material tested was a considerable variety of expanded-metal work, some of the metal being galvanised with tin or copper, besides hollow-stone material and brick. Armed-cement was especially dealt with. There was a considerable reduction in the number of tests of ordinary concrete, probably because the large consumers made their own tests. But many more tests were made with trass-lime mortar. There was a considerable increase in the number of samples of lime sandstone, showing that this is coming into use. Another notable feature of the tests was the number of samples of jointless flooring in imitation of linoleum and woodwork. For this purpose for the first time the sandblast has been employed in producing patterns on these materials. A committee appointed by the Minister of Public Works and for Trade and Commerce was charged with the testing of gypsum; samples are being obtained from abroad as well as at home, and the committee has paid a special visit of inspection to the gypsum works in the Harz Mountains, which are centuries old.

Turkestan Houses.

After the annexation of Central Asiatic Khanates, says the "Novoe Vremya," we began a type of building like Swiss, Tyrolean, Caucasus or other mountain places. The walls of the large Turkestan houses consist of wooden carcases strengthened with a system of uprights bound together with beams above, the carcase being filled up with burnt-brick or dried clay. Such houses, if raised about 2ft. from the ground, are very lasting, especially if the lower beams are steeped in tar. When earthquakes occurred, the inhabitants of two-storeyed houses hastily left their homes, whilst those in the frame-houses remained indifferent, and were not frightened even by the falling of a cornice: so that in future no house should be encouraged that is based on brick. Many of our architects will cry out against this, as they will not be able to utilize the style they have learned; but we can have beauty with the Swiss or Tyrolean styles, and combine the carcase system with it.

Russian Theatre Architecture.

Before the Russian Architectural Society (as reported in the "Novoe Vremya") Mr. A. K. Montag gave a lecture a short time ago showing the disabilities under which the Russian theatre architect labours, as compared with his colleagues of other countries, owing to Government restrictions. The German conditions are much simpler, and as a consequence the Russian theatre has remained much inferior to the German. For example, whereas in the Russian small theatre there can only be one range of boxes besides the parterre, in Germany there may be four rows. Again, business premises are not allowed to be combined with large theatres, whereas in Germany this is permissible. In addition, there are various technical restrictions: so that during the last thirty years not a single large theatre has been built in Russia. The lecturer concluded with the hope that this state of things would be changed by the agitation of the Russian architects.

New Buildings in Berlin.

The "Deutsche Bauzeitung" in its description of Ludwig Hoffmann's work on Berlin building says that the best basis for the artistic representation of a building is a clear unconstrained ground plan, bearing simply in mind the purpose of the building. If the plan is good, it does not need much art to give an artistic effect to the superstructure. But on the other hand, the brightest ideas do not suffice to make up for the faults of a defective plan. A work of art can never result from a collection of good ideas without a good general design. The "Centralblatt für Bauverwaltung" accepts this standpoint, and charges the author with inconsitency when he says that Italian plaster façades are good for common schools and schoolmasters' residences. This is an expensive dress for such buildings. It has hitherto been used only for high-class houses: then what becomes of the general principle that every building should express the object of its existence?

Views and Reviews.

Conversion of Timber.

The use of English timber has of recent years so receded into the background before the invasion of foreign timber that we are inclined to unduly overlook it and forget the way in which to handle and use it. Such a book therefore as this not only renews attention to the many advantages which English timber possesses, but keeps in permanent form a mass of information and experience in the conversion of timber for the market which under the close competition was likely to be lost. This little book should be in the hands of every timber merchant and timber worker. The author's *nom-de-plume* is familiar to readers of the "Timber Trades' Journal."

"English Timber and its Economical Conversion," by "Acorn." London: William Rider & Son, Ltd., 164 Aldersgate Street, E.C. Price 3s. 6d.

The Great Nineteenth Century.

This is only a small book and yet it sets forth the aims and achievements of art during the nineteenth century in a comprehensive manner, as one would expect from so eminent a critic as Dr. Waldstein. Moreover, it is a decidedly refreshing book to read, because instead of abuse or condemnation we find eulogy of the past century; indeed, the author feels himself to be in the very midst of a vigorous art life surrounded by the growth of great things in all matters human—"so great, important and epoch-making, that I doubt whether in the whole of the race a like outburst of energy can be found." Art to him is not painting only, but literature, music, sculpture, architecture, and all else that arises out of man's natural desire for harmony. Similarly, he gives a wide meaning to science, and strongly contradicts the assertion that an age must be either of science or of art, holding that a great age is likely to produce great people, great in many different things—"the achievement of Plato and Aristotle was as great in science as that of Phidias and Sophocles was in the dominion of art. The same must be said of the leaders of the Renaissance. The same can be said of the nineteenth century. It is emphatically untrue that the achievement of the nineteenth century has been less in art than in science." Dr. Waldstein considers the past century was the age of artistic expansion—in "landscape painting, which has been carried on in the nineteenth century in a manner and to a degree unknown to previous generations"; in literature ("I for one am astounded at the number of remarkable books produced every year . . ."); in music, poetry, sculpture, architecture and decoration.

Dr. Waldstein is above all a modern, and looks forward to development in the spirit of our own age; so that it is fitting he should admire Rodin's work and believe even that sky-scrapers could be converted into imposing tower-like structures, and railway stations and exhibition buildings made impressive. He confesses, however, that for many years he could not put himself in sympathy with many genuine sculptors of the type of Rodin, and the rough and broad impressionist manner in which they worked their uncoloured statues in stone and bronze. "For I felt that the sketchy and unfinished character, the suggestion of the accidental which the appearance of such works produced, were contrary to the essential nature of sculpture . . . But I learnt to recognise the justification of artists of the Rodin type when I realized that the range of sculpture, as regards subjects to be presented, has expanded in our own age; and that the new forms of expression which these new ideas required have shifted the monumental qualities of sculpture on to a different plane."

Of "L'Art Nouveau"—the art of macaroni and the mutton bone—Dr. Waldstein speaks with caution—he believes it was born in America with the Philadelphian Exhibition of 1875, and carried to Europe through the illustrated magazines.

The book is of much interest, and exhibits the wide learning which its author possesses. We note, however, that Chavannes is spelt without the "s" (p. 74); Copley Fielding with a comma between, as if it were two men (p. 62); and "Adams's" instead of Adams or the Brothers Adam (p. 81).

"Art in the Nineteenth Century," by Charles Waldstein, Litt.D., Ph.D., L.H.D. (a University Extension Lecture delivered at Cambridge). Cambridge: The University Press, price 2s. nett in cloth. paper covers 1s.

Mineralogy.

This book by Prof. Henry A. Miers deals only with the character and properties of materials. It does not deal with the modes of occurrence of minerals, their geological distribution, their origin, their alteration or their artificial reproduction. The book is very wisely confined to the former, for it already consists of 584 pages, and another volume would be required to deal with the other branches of the subject of mineralogy. Besides, this division makes the subject clear to the student, who, when he has mastered this book, can proceed safely to the other branches. Professor Miers is a great authority on this subject, and he has produced a most excellent treatise, so very clearly written that anyone having even a slight acquaintance with general science cannot fail to easily grasp almost everything in it. The book is divided into two parts; the first deals with the crystalline and general properties of minerals, the relations between the properties, and the description and determination of minerals; the second part is a description of the more important mineral species. The book is concluded with a number of tables and a very full and carefully prepared index; it is most fully illustrated with about 700 clearly drawn figures. Minerals are defined and determined by the study of two properties which they possess, namely, chemical composition and crystalline form. Minerals may have the same chemical composition and yet differ in all other essential properties, and, on the other hand, they may have the same form and yet differ in all other respects, but if they are of the same form and composition they will certainly have in common other properties, and are said to belong to the same mineral kind; there are about 800 kinds. The properties of minerals can be divided under the heads of general (such as density, specific heat, temperature of fusion, and chemical composition), and directional (such as cohesion, elasticity, and numerous optical, thermal, electric and magnetic properties, and, as well, the crystalline form). If a mineral has all its directional properties in the same direction it is said to be amorphous; when some of them vary with the direction they are said to be crystallised. An amorphous material has no characteristic shape (such as powder or glass), but every crystallised material has one—a body exhibiting its characteristic shape being called "a crystal." The form of a crystal is due to the substance of which it is composed and not to the conditions under which it has been crystallised, and is therefore a fixed property for study. The study of minerals along these lines has progressed greatly of recent years, and we are under a great debt of gratitude to Professor Miers for having summarised so masterly the facts discovered. The study of minerals is of the utmost importance in the study of the composition of building stones and their resistance to stress and atmospheric action, and anyone investigating the subject from this point of view should procure this book.

"Mineralogy: An introduction to the Scientific Study of Minerals," by Henry A. Miers, D.Sc., M.A., F.R.S., Waynfleete Professor of Mineralogy in Oxford University. London: Macmillan & Co., Ltd. Price 25s. nett.

Construction Notes.

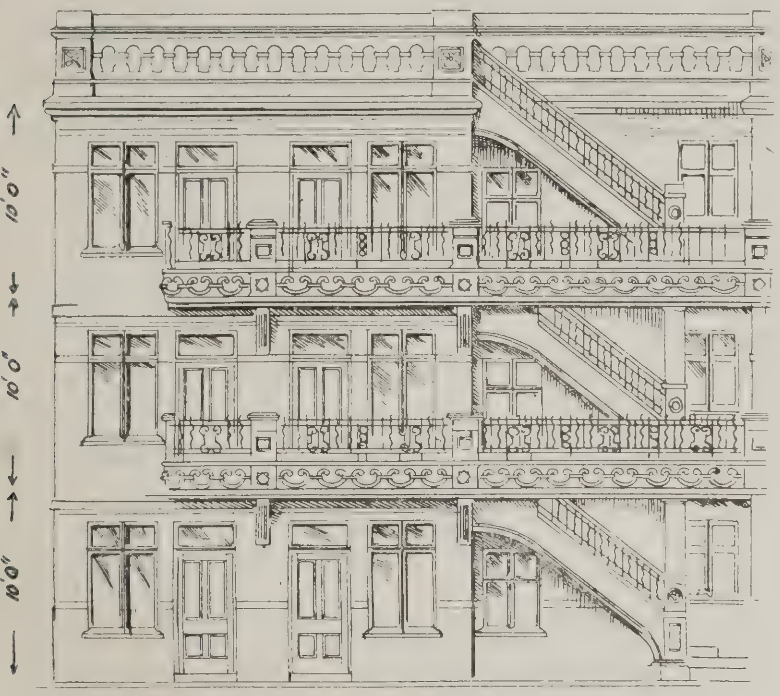
Corrosion of Steel. SENSATIONAL statements have recently appeared in the press about a new process of hardening and "annealing" steel so as to protect it against atmospheric action. Until we have further and fuller information, the real value of the process cannot be determined, but we wait in the hope that expectations will be justified. The process is known as the Holzer-Frith process, and was discovered about three years ago. We are told of experiments that have been made to test the resistance to corrosion of steel which was treated by it. Two similar pieces of steel—one treated by the new method—were immersed in sulphuric acid for seventeen days, being taken out and exposed to the atmosphere for fifteen minutes three times each day. At the conclusion of the test it was found that the piece not treated by the new process was eaten away to the extent of 75 per cent., whereas the treated piece was not perceptibly corroded, and was barely discoloured. So much for the question of protection from corrosion. Now, as regards the hardening. Under the present method of cooling by plunging hot steel into a cool medium, such as oil, water, &c., the steel is hardened it is true, but is usually rendered very brittle owing to the irregular contraction, which causes great internal strains. Under the new system the operation of plunging is done away with, the material to be treated being placed in a tank containing mercury at ordinary temperature capable of being hermetically sealed. After sealing the tank, heat is applied by gas or coke furnaces, and the material is not removed until cold. During the time of cooling an electric current acts on all sides of it—this part of the process is still guarded as a secret by the inventors. The result is stated to be a very hard and very tough uniform material which resists corrosion by salt water or the atmosphere. The new process costs shillings where the old system costs pounds. The Government, we are informed, have investigated the process, and the experts are stated to have sent in a favourable report; the great Armstrong firm at Elswick are likewise stated to have tested the process with favourable results. If all that is claimed for the process is justified, some of the greatest difficulties in the application of steel to structures will be overcome. We have already pointed out that one of the most promising lines of research in the protection of iron and steel against corrosion lies in the direction of an alteration of the molecular structure of the material. Attention has hitherto been chiefly paid to protective coverings, such as paints or the Bower-Barff process (this consists in heating iron to about 538 degs. Centigrade in an atmosphere of superheated steam, which decomposes to form a coating of black ferroso-ferric oxide of iron). The cost of applying paints, &c., to ships and bridges totals to an enormous sum yearly. The Forth Bridge alone costs £40,000 a year to maintain. Perhaps under this process, or another on similar lines, we shall see a great development in the use of exposed ironwork in architecture. Architects have felt an aversion to doing this up to the present, disliking the constant painting, which flakes and looks bad in a few years, and have hid it as an unsightly thing. Engineers too seem to feel this. But at what cost of the beauty that comes from the logical expression of structure this avoidance has been productive of in modern architecture and bridge engineering we all know. Perhaps now we shall have a reasonable treatment of the modern shop front, though it has always remained open for the bold architect to electro-plate the iron girder and stanchions.

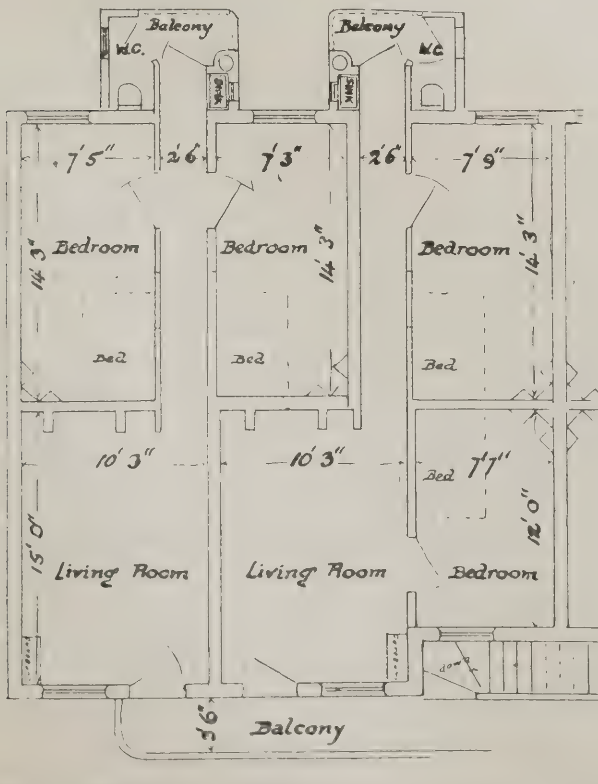
H. K. D.

LIVERPOOL'S CONCRETE COTTAGES.

As already announced in our columns, the Liverpool Corporation proposes to erect some concrete dwellings in Eldon Street, according to the designs of their city engineer (Mr. John A. Brodie, M.I.C.E.).

The building will consist of three floors, on each of which four tenements are arranged. Each tenement comprises a living-room 15ft. by 10ft. 3in., and two bedrooms averaging 7ft. 4in. by 14ft. 3in., the height of the rooms from floor to ceiling being 10ft. The floors will be covered with ¾in. boards or other suitable material, laid on the concrete. The arrangement of the bedrooms relatively to the passages and conveniences is such that, if thought desirable, pairs of tenements can be used as two three-roomed houses, or alternatively as one four-roomed house and one two-roomed house. A fireplace and chimney is shown in each room, and through ventilation and light is provided. A cupboard for food is provided in each living-room against an outer wall, which is perforated to admit of free ventilation. Each tenement has a scullery, separate w.c. and ash-shoot accommodation, these being arranged in a projection at the back, and together with the drainage connections are kept outside the main building. Each tenement is provided with a separate entrance doorway from the balcony facing the street. The stairs and balconies are on the front elevation, and open to full view from the street, with the object of avoiding the evils of common stairs and passages within the buildings. As the roof is practically flat (the slope being that usually allowed as cross-fall for flagged footwalks), a stair has been provided to the roof, which, being surrounded by parapet walls and made waterproof, can be used for washhouses and drying-ground or, if desired, as a playground.





LIVERPOOL CORPORATION COTTAGES. JOHN A. BRODIE, M.I.C.E., ARCHITECT.

The materials to be used in the construction of foundations, walls, floors, roofs, &c., of these tenements will be crushed clinker from the refuse-destructors and Portland cement, with a small proportion of embedded steel or iron. The crushed clinker and cement will be mixed in proper proportions at the destructor depôt, and filled into moulds to form slabs, each slab representing a complete side, floor or roof of a room. The openings for doors, windows, &c., as well as the fireplaces and flues, will be formed in slabs, and projections in the nature of dovetails with their corresponding notches or cavities are provided, so that each slab may be dovetailed to each of the slabs with which it comes in contact when erected, the permanent jointing material being cement-mortar. The balconies, stairs, balustrades and the chimneys, where they rise above the roof, are similarly moulded in blocks. The site of the buildings will be excavated where necessary, and the foundations composed of the same materials filled *in situ*, brought up to a level surface at the ground levels and allowed to set. The drainage, water and gas connections from the street are also put in and brought up to the ground level adjoining or under the site of each w.c. or scullery. When the various slabs and blocks have matured, they are lifted, placed on wagons behind a traction engine, and removed to the site of the proposed building. They are here lifted from the wagons by an overhead travelling crane, and deposited in their final position in the building. When the building has been erected, the windows, doors, grates and fittings are fixed in position, and completed as usual.

The engineer's estimate of the cost of the scheme is as follows:—

	£	s.	d.
Land— 413 sq. yds. at 12s. per sq. yd.	247	16	0
Cost of buildings complete, including drainage and finishing open spaces -	1,230	0	0
Capital expenditure -	£1,477	16	0
Twelve tenements (each consisting of three rooms) at 4s. per week, making a gross rental per annum of -	124	16	0
Less—Allowances for outgoings, say 40 per cent.	49	18	4
	£74	17	8

Or equal to a 5 per cent. return on the capital expenditure.

In the case of the first block it will be necessary to execute most of the work by hand labour; but if the experiment warrants the erection of further blocks on this system, the additional economies obtainable from conveying and mixing the materials in the first instance, and the subsequent handling of the slabs by mechanical arrangements, would enable the actual cost to be materially reduced.

We have already expressed our opinion that suitable concrete cottages can be erected, provided the work is carefully supervised, and we are therefore glad to see this experiment adopted by the Liverpool Corporation: but, though the plan has its merits, we cannot regard the elevation as satisfactory. The design is commonplace and the railings and embellishments on the balconies, the windows and the parapet, exhibit a sorry lack of architectural taste.

Law Cases.

What is a Sky-sign?—Mr. Francis gave his decision at the South-Western Police Court last week that an advertisement board standing out from the face of a building at a considerable height from the ground, but not above the roof, was not a sky-sign within the meaning of section 125 of the London Building Act.

An Alleged Bogus Building Concern.—At Scarborough Police Court on March 27th James Bakes, accountant, and Charles Strich, clerk, both of Scarborough, were committed for trial on charges of fraud and conspiracy in connection with an alleged bogus building concern, which they conducted under the title of the Northern Counties National Building Association, with an invested capital of £200,000. The *modus operandi* was to induce people to subscribe amounts periodically on the representation that within easy time they would become property owners, and it was alleged that the prospectus and other documents contained misstatements in respect of the location of the chief office, the directors' names, and other matters.

Builders' Successful Action against the Gravesend Corporation.—The case of *F. & E. Davey* v. *the Mayor, aldermen, and burgesses of the Borough of Gravesend* was recently heard in the King's Bench Division of the High Court of Justice. It was an action by builders and contractors to recover the sum of £2,544 as damages for breach of contract and the wrongful seizure of their plant by the defendants. By an agreement dated November 30th, 1901, the plaintiffs contracted with the defendants to build electric-lighting works at Gravesend for £7,094, according to a specification and conditions. The engineer was Mr. Trentham. Plaintiffs had carried up the chimney shaft 53ft. and erected the engine- and boiler-house, when the defendants expressed dissatisfaction with the work. It was decided to take the advice of another architect, and in April, 1902, Mr Crickmay, F.R.I.B.A., was asked to make a report. Mr. Crickmay did so, condemning a great deal of the work as not being according to the specification, and also condemning the chimney shaft as not being on proper foundations. Mr. Trentham then decided that the chimney shaft must come down; and after consultation it was agreed that the plaintiffs should rebuild the chimney shaft at an extra cost of £25. Mr. Trentham then gave the plaintiffs a certificate for £1,500, which he lodged with the town clerk on May 15th. The next day he wrote to the plaintiffs saying that owing to the defective state of the work he intended to retain the certificate he had given, and on May 23rd he wrote saying that he would not allow any new work to be done until the unsatisfactory work was set right. On May 30th the town clerk wrote the plaintiffs that the Council had arrived at the determination to stop the work. At the date of the stoppage the plaintiffs had done £6,300 of work, and had received £4,000, leaving a balance due to them of £2,300, and they also left on the premises plant and material to the value of £150 – For the plaintiffs Mr. Woodward and Mr. Thompson, architects and surveyors, stated that the brickwork was good, also the mortar, and the plaintiffs' work had been carried out quite satisfactorily; that the small variations from the specification could easily have been rectified by the contractor if the matters had been brought to his notice; and that the fault with the chimney shaft was owing to the site being water-logged and not with the building. – For the defence Mr. Crickmay stated that the brickwork and joinery were unsatisfactory. Fletton bricks were used instead of stocks; pit gravel instead of Thames ballast was used for making concrete for foundation; the fire-bricks were of inferior quality; the mortar in the chimney shaft was of inferior quality; the pointing was bad; and various other small matters were not according to the contract.—Mr. Justice Lawrence, in summing up to the jury, commented upon the absence of Mr. Trentham from the witness-box, whom he characterized as the only witness who could tell them all about the matter. His Lordship said it appeared that outside pressure had been brought to bear upon Mr. Trentham, who began to make complaints about the work which he had never made before. There was no doubt that Mr. Trentham saw the materials that were being used, and the question was whether, as the defendants' representative, he did not acquiesce in their being used. Did not that point to the fact that the trouble was between Mr. Trentham and the Corporation, and not between the plaintiffs and the Corporation, and the reason of bringing down Mr. Crickmay was that pressure might be put upon Mr. Trentham to do what the Corporation wished? With regard to the £1,500 certificate, it was said by defendants' counsel that the question of the right to withhold that was a matter of law. He was inclined to agree, and if he had to decide it he would hold that the engineer could not withdraw the certificate. That being so, the plaintiffs would be entitled to the £1,500, and also something for tools, plant, &c., together with the amount of work they had done at the time of stoppage. On the other hand, the defendants claimed to deduct £735 for bad work.—The jury found for the plaintiffs with £2,544 damages. Judgment accordingly.

Builders' Notes.

The Wilts and Dorset Bank, Salisbury, has been supplied by Messrs. E. H. Shorland & Brother, of Manchester, with their patent Manchester stoves.

The Lancaster Master-Builders' Association held its annual meeting recently, when Mr. T. Mawson was elected president; Mr. H. Warbrick, Mr. G. Wright and Mr. R. P. Wilson, vice-presidents; and Mr. D. S. Cross, treasurer.

The Bricklayers at Walsall have struck work in consequence of an application for an advance of ½d. per hour and an alteration of rules, particularly with regard to overtime, having been refused. About 200 men are understood to be affected. It is stated that the employers have offered to submit the dispute to arbitration.

Berlin Carpenters Dispute.—It is feared that about 12,000 Berlin carpenters and workers in wood will be locked out. That number of men employed at woodcutting and dressing machines struck work a short time ago for better conditions of labour. The Association of Masters informed the men's union, however, that unless work were resumed under the old conditions on Saturday last they would be compelled to resort to strong measures. As the men have taken no notice of this ultimatum the masters are taking steps to dismiss them *en masse*.

Newcastle Stonemasons.—A largely attended meeting of Newcastle, Gateshead and Gosforth operative stonemasons was held last Tuesday week to consider the proposed code of amended rules put forward by the Newcastle and Tyne District Building Trade Employers' Association. The chief feature of the new code is that the masters desire the workmen to labour nine hours a day instead of eight in the summer months, and seven and a half hours from November 1st to February 1st in place of the seven hours now worked in December and January. The men decided unanimously to reject the whole of the new rules suggested.

The Bricklayers of Leigh, Atherton and Tyldesley, who threatened to strike because the masters had refused to advance wages from 9½d. to 10d. per hour, finally decided to withdraw their application for an advance of wages, and agreed to accept the proposal that in winter work should only be between light and dark.

A Dispute at Preston has occurred in the painting trade. In view of the Guild 8½d. per hour was conceded by the masters, but subsequently the state of trade did not justify the advance, and the masters gave six months' notice to revert to the 8d. rate. The men accepted the proposed reduction, but gave the necessary notice for an advance to 9d. to come into operation last week.

Strike of Belfast Painters.—A peculiar dispute has arisen in the Belfast house-painting trade resulting in the withdrawal of forty men from one of the largest concerns there. It occurred through a member of the National Amalgamated Society of Painters and Decorators refusing to become a member also of the local painters' trade union, which is a separate and distinct body, and the refusal of the employers to dismiss him.

The Horton Asylum: Great Excess over Estimate.—The excesses over the Horton Asylum are now engaging the attention of the London County Council. The building was undertaken by the Works Committee at £284,445, or £12,130 below the lowest tender (Messrs. Kirk & Randall's). A heavy loss is now reported. The actual cost of the work to the Works Department has been £330,500, or £39,500 over the architect's final estimate. In the opinion of the present Works Committee the causes to which this excess is due are—(*a*) Error of judgment on the part of the late manager of works in undertaking the work, and insufficiency of accepted estimate; (*b*) refusal of local authority to allow temporary railway for carriage of materials, &c.; (*c*) rise in prices of materials and in wages; (*d*) scarcity of labour. The Committee consider that the time of two years allowed for the erection of the asylum was too short, and that had the work been done by contract the quality of the work might have suffered.

Engineering Standards Committee: Government Grant. – The Treasury have expressed their willingness to include in the Board of Trade Vote for 1903–4 a sum of £3,000 as a contribution to the funds of the Committee for that year. After the sum has been voted by Parliament the actual expenditure under the vote will need to be authorized by the Board of Trade (Railway Department) on the recommendation of a committee appointed by the Institution of Civil Engineers. This committee will consist of the president and the senior vice-president of the Institution, Mr. James Mansergh, Sir John Wolfe Barry, Sir William Preece, Sir Benjamin Baker, Sir Douglas Fox and Mr. Archibald Denny, with a representative of the Board of Trade. The Engineering Standards Committee venture to hope that when the present vote is exhausted the Government will favourably consider the desirability of further assistance, as they attach very high importance to the necessity of organising a permanent body which shall keep in touch with the scientific and practical development of the trades concerned and be prepared to revise the standards by addition or deletion, and to modify the methods of testing as necessity may arise.

Fireproof Floors.– The Edinburgh Architectural Association held a meeting last week, Mr. Hunter Crawford presiding, when Mr. Frank Caws, F.R.I.B.A., of Newcastle-on-Tyne, gave an address on "Fireproof Floors and Construction." He pointed out that since the great fire in London, which caused quite a revolution in the substitution of brick walls for those of timber, there had been but very slow progress in fireproof construction. Latterly, however, the comparatively new material, Portland cement, had made fireproof floors a feature, the mode of construction of which permitted of great variation, and the practice of architects and experts showed wide differences in matters of detail. Generally speaking, said the lecturer, the introduction of steel girders as supports for the concrete had been carried to a very unwise excess, inasmuch as the action of fire upon the steel, causing it to expand, made it most injurious to the concrete floors, and, instead of being a support, it proved in such cases the means of their destruction. Therefore, he advocated a method of constructing floors in large slabs of concrete, with a minimum amount of steel bearers, so disposed and protected from the fire so as to give the necessary support without introducing an element of weakness. In closing, Mr. Caws described his own practical experience in buildings he had erected on the principle which he advocated.

Labour in the Colonies.—The Emigrants' Information Office, 31, Broadway, Westminster, S.W., state that this is the best season of the year for emigration to Canada, and there is an excellent demand for almost any kind of labour all over the Dominion. Emigrants should prepare to start at once. At Sydney, in Nova Scotia, there is a good demand in the steel and iron works and in the coal mines for general labourers, machinists, &c. Both in Nova Scotia and Ontario men, skilled and unskilled, are wanted for sanitary earthenware works and brickyards. The building trades are busy in all parts, and carpenters, bricklayers, plasterers and others are wanted. The metal trades are very busy in Ontario. In the Province of Quebec and in Ontario lumbermen have been very busy. In British Columbia the metal and building trades are fairly busy. In New South Wales and other Australian States the long drought has now, to a great extent, broken up; but it will be some time before its effects will have passed away. A report from Sydney states that the trade is very bad in New South Wales generally, as well as in Sydney itself. The engineering trade is very dull, and no more mechanics whatever are wanted. The building trades are better off owing to some Government works being in hand. There is no demand whatever for general labourers, wharf labourers or station hands. In other parts of Australia there is little demand for more labour, as the country is still suffering from the effects of the drought. In New Zealand there is a good demand for men in the building trades at Auckland, Christchurch, Dunedin and other places. In Cape Colony there is a demand for plasterers, bricklayers, carpenters and first-class painters. The cost of living is high. In Natal a good deal of work is going on in the building and other trades, but the local supply of labour is generally sufficient, though specially skilled men, if they land with a little money, should be able to procure work without difficulty. Wages are high, but the cost of living is high also. There has been a strike of bricklayers at Durban. Permits are still required by those proceeding to the Transvaal and Orange River Colony; they are not issued in this country, but must be applied for at the Permit Office at the Port in South Africa at which the emigrant lands. In the building trades at Johannesburg materials are coming up from the coast somewhat more quickly, and consequently men in those trades have been better employed, but a good many are still out of work. Shop and office fitters have been well employed. In the Orange River Colony there is a fluctuating demand for good carpenters, masons, fitters and painters. The cost of living is very high.

Keystones.

The R.I.B.A. and Registration.—Some sort of an official declaration against architectural registration is given in the R.I.B.A. "Journal" for April 4th. We hope to deal with it in our next issue.

Extension of Woolwich Arsenal.—It has been decided to enlarge Woolwich Arsenal, and for that purpose a large tract of land on Plumstead Marshes, lying between the present Arsenal boundary and the London County Council outfall sewer, is to be acquired at a cost of about £80,000.

"**Ventilating and Warming.**"—In the first part of this paper by Mr. B. R. Tucker published in our issue for March 25th a printer's error occurs in the third column of p. 84, line 12, where it is obvious the word "not" is a mistake. Air supplied by the plenum system can of course be filtered, washed, warmed or cooled, as desired.

A War Memorial Competition.—Over 100 designs were sent in for executing and erecting a war memorial at Chester-le-Street. The design selected is by Messrs. James Bennett & Son, Commercial Street, Birmingham, and is in the form of a granite obelisk over 15ft. high, the details being suggestive of the purpose for which it is intended.

Dissolution of Partnership.—The partnership existing between Mr. Frederick Wheeler, F.R.I.B.A., of 6, Staple Inn, W.C., and Horsham, and Mr. Percy Dean Lodge, F.MAN S.A., of Horsham, practising in Sussex as Frederick Wheeler & Lodge, architects, Bank Chambers, Carfax, Horsham, was dissolved on March 31st last. The practice will now be carried on solely by Mr. Frederick Wheeler at both the above London and Horsham addresses.

The Statue of the late Mr. Gladstone which Parliament authorized to be placed in Westminster Abbey, and which has been executed by Mr. Brock, R.A., has been erected in the north transept under the direction of the sculptor. It is of white marble and is erected on a marble pedestal. The deceased statesman is represented standing, wearing the gown of a D.C.L. of Oxtord University, and with his face turned slightly to the left towards the choir.

Sir W. Abney retires.—In the Architectural School of the Royal College of Art, South Kensington, last Wednesday, a bronze bust of Sir William Abney, by Professor Lantéri, was presented to Lady Abney on the occasion of the retirement of Sir William Abney from the principal assistant-secretaryship of the Board of Education, South Kensington. Sir John Gorst, M.P., in making the presentation, spoke of Sir William Abney's services in the development of the Royal College of Art. The whole of the merit for the change which had been brought about in the department, he said, was due to the work of Mr. Spencer and Sir William Abney; and the institution was now one of which the country might be proud.

Caerphilly Congregational Church Competition.—Clause 7 of the conditions of this competition states that the successful competitor will be paid 5 per cent. for all the "usual professional services of an architect," including the taking-out of quantities. The Cardiff, South Wales and Monmouthshire Society has been endeavouring to get this clause modified, and the R.I.B.A. addressed a letter to the promoters on the subject; but the answer given is a blank negative. The promoters have now issued to intending competitors what purports to be a copy of the correspondence between themselves and the Cardiff Society, but *with no reference whatever to clause 7!* The Institute hope that none of their members will enter for the competition.

A new Fire Station has been erected in Blackstock Road, Highbury, N.

Notre Dame, Paris, is to be lighted by electricty.

The Height of "Sky-Scrapers" in America can be legally restrained to 90ft.

A new Board School at Coatbridge has been erected at a cost of £7,000. Mr. James Davidson, Academy Street, Coatbridge, was the architect.

St. John's Wesleyan Methodist Church, Glasgow.—Mr. James McKissack informs us that this church (illustrated on p. 99 of our last issue) was designed by his father and Mr. Rowan when partners, not by Mr. Rowan alone.

A Donatello discovered.—Professor Bonola has discovered at Florence an original bas relief of Saint Cecilia by the Italian sculptor Donatello, of which a similar work in the British Museum, London, is said to be merely a copy.

Mr. Bertram Blount, F.I.C., F.C.S., announces that owing to the death of his late partner, Mr. W. Harry Stanger, M.I.C.E., F.C.S., the firm of Stanger & Blount, chemical laboratory and testing works, is dissolved. The business is being temporarily conducted at 2, Broadway, Westminster, but at an early date Mr. Blount will remove to other premises in Westminster.

The Edinburgh Architectural Association recently visited Darn Hall, near Eddleston. Permission for the visit was kindly granted by Lord Elibank and Mr. John R. Menzies. The house, which dates from about the end of the seventeenth century, occupies an elevated and secluded position in a romantic glen. The surrounding grounds have been laid out with great taste. The place was originally known as Haltoun or Blackbarony. The party was under the leadership of Mr. Thomas Ross, architect.

A Liverpool Competition.—At the Liverpool City Council meeting last week the award of Sir William Emerson was read on the seventeen plans sent in for baths, tramway offices and general offices, which the Council proposes to erect on the old site of the George's Dock at the Pierhead. The cost of the scheme has not yet been ascertained, but the baths especially are to be among the most extensive in the country. The awards were as follows:—(1) Stones & Stones, Blackburn, and W. E. Sproat, Glasgow, jointly; (2) Briggs & Wolstenholme, Liverpool; (3) Huon A. Matear, Liverpool, and Simon & Crawford, Liverpool and Manchester, jointly. The successful plans are to be exhibited at the Walker Art Gallery. The adjudicator suggests that an open space be left around the buildings, especially the baths, as on the Continent, so as to provide a fresh current of air across, and says that if this were done he would be inclined to recommend the first prize to the third firm, provided also they were a little stronger in their architecture.

Obituary.

Mr. James Carter, F.G.S., of Granville Road, Blackburn, died last week at the age of sixty-one years. Mr. Carter was the principal partner of the well-known firm of Messrs. James Carter & Co., coal, lime and cement merchants, of Blackburn, Clitheroe and Chatburn. Mr. Carter was born at Kendal, but going to Lancashire when still a young man, he entered into partnership with Mr. Rowe, at Darwen, this being about the year 1867. The business soon grew, one result being the establishing of the Bellman Park and Salthill Lime Works, Chatburn and Clitheroe, and, later still, the founding of branch offices at Fleetwood and Blackburn.

Complete List of Contracts Open.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
		BUILDING:		
April	9	Huddersfield—Four Shops	Industrial Soc., Ltd.	J. Berry, 3 Market Place, Huddersfield.
,,	9	Pleasley, near Mansfield—School	School Board	J. Perkin, Architect. Main Street. Shirebrook.
,,	9	Stockport—Convenience	General Purposes Committee	J. Atkinson, Borough Surveyor, St. Petersgate, Stockport.
,,	9	Stranraer, Scotland—Gasholder Tank	Gaslight Co.	Manager. Works, Harbor Street Stranraer.
,,	9	Aberbeeg—Twenty Cottages	No. 2 Building Club	G. C. Hilliard, Architect Market Chambers, Llanhilleth.
,,	9	Slough—School Buildings	School Board	Lee & Farr, Architects, Slough.
,,	9	Barrow-in-Furness—Wesleyan Chapel	Trustees	Sames & Henshaw, Architects, Oxford Chambers, Abbey Road, Barrow.
,,	9	Ilkley—School Buildings	Wesleyan Church Trustees	Adkin & Hill, Architects. Prudential Buildings, Bradford.
,,	9	Littlehampton—Alterations, &c., to Town Offices	Urban District Council	H. Howard, Surveyor, Town Offices. Littlehampton.
,,	9	New Pitsligo, Scotland—Organ-Chamber	—	D. & J. R. M'Millan, 211 Union Street Aberdeen.
,,	9	Plymouth—Volunteer Headquarters	2nd Devon Royal Garrison Artillery.	T. R. Kitsell, 1 George Street, Plymouth.
,,	11	Annfield Plain, Durham—Alteration, &c., to Branch	Co-operative Society, Ltd.	G. T. Wilson, 21 Durham Road. Blackhill.
,,	11	Hirst, Ashington—Church and Classrooms	—	T. Tulip, Whinney Hill, Choppington.
,,	11	Crickhowell—Pair of Villas	T. Lewis	B. J. Francis, Architect, Abergavenny
,,	11	Ton, Wales—Villa	W. Thomas	W. D. Morgan, Architect. Victoria Chbrs., Pentre, Rhondda Valley.
,,	11	Blaengarw, Wales—Church Extension and Alteration	—	J. M. Jones, 54 King Edward Street. Blaengarw.
,,	11	Londonderry—Cottages	Rural District Council	J. J. S. Barnhill, 1A Strand, Londonderry.
,,	11	Llanfabon. Wales—Additions to Llechwen	—	A. O. Evans, Architect, Pontypridd.
,,	11	Ballygowan, co Down—Reseating and Renovating Church	—	J. H. Dickson, Ardmore, Ballygowan.
,,	12	Letterkenny, Ireland—Rebuilding Business Premises, &c.	B. Ramsey	J. P. McGrath, Architect, Commercial Buildings, Foyle Street, Londonderry.
,,	13	Perranzabuloe, Cornwall—Repairs to Church Tower	Vicar and Churchwardens	Rev. H. Edwards, Vicarage, Perranzabuloe.
,,	13	Inishowen, Ireland—Cottages	Rural District Council	R. Moore, Clerk, Workhouse, Carndonagh.
,,	14	Aldershot—Public Offices, &c.	Urban District Council	C. F. Hutchinson, 11 John Street, Bedford Row, London.
,,	14	Netherne, Surrey—Excavating Site and Foundations of Asylum.	County Council	G. T. Hine & Co., 35 Parliament Street, Westminster, S W.
,,	14	Netherne, Surrey—Foundation Works	County Council	G. T. Hine & Co., 35 Parliament Street, Westminster, S.W.
,,	14	Carr Bridge, Scotland—Cottages	—	Mr. Thomson, Stationer, Grantown.
,,	14	Hastings—Brickwork Labour	Corporation	P. H. Palmer, Waterworks Engineer, Town Hall, Hastings
,,	15	Burnley—Post Office	Commnrs. of H.M. Works, &c.	Secretary, H.M. Office of Works, &c, Storey's Gate, S.W.
,,	15	Hartlepool—Twenty-five Houses	North-Eastern Railway Co.	W. Bell, Architect, York.
,,	15	Hazel Grove, Stockport—Club Premises	Reform Club	Secretary, Hazel Grove and District Reform Club, Hazel Grove.
,,	15	Hunslet. Leeds—Sorting Office	Commnrs. of H.M. Works, &c.	H. G. Nixon. H.M. Office of Works, Infirmary Street. Leeds.
,,	15	Manchester—Cottages	Sanitary Committee	City Treasurer, Town Hall. Manchester.
,,	15	Watford—Destructor Buildings, &c.	Urban District Council	D. Waterhouse 14 High Street, Watford.
,,	15	Alnwick—Villa	C. Percy	W T. Spence, Architect, Ashmount, Shotley Bridge.
,,	15	Winterton, Lincs—Church Restoration	—	C. H. Fowler, Architect The College, Durham.
,,	15	Copmanthorpe and Ulleskelf—Nine Cottages	North-Eastern Railway Co.	W. Bell, Company's Architect, York.
,,	15	Crewe—Municipal Offices	Corporation	Borough Surveyor, Municipal Offices, Crewe.
,,	16	Leeds—Cement	Sewerage Committee	City Engineer, Leeds.
,,	16	Bargoed, Wales—Converting Houses to Business Premises	—	D. S. Jones, Grocer, Bargoed
,,	16	Ferryhill, Durham—Branch Store	Bishop of Auckland Co-op. Soc., Ltd.	F. H. Livesay, Architect, Bishop Auckland.
,,	16	Lowestoft—School Chapel	—	E. E. Smith, 145 Victoria Road North, Southsea.
,,	17	Burneside, near Kendal—Mill	J. Cropper & Co., Ltd.	J. Hutton, Architect, Kendal.
,,	17	Convoy, co. Donegal—Church	—	J. M'Intyre, Architect, Letterkenny.
,,	17	Preston, Lancs—Bandstand	Corporation	Borough Surveyor, Preston
,,	18	Halifax Additions to Works	C. Redman & Sons	M. Hall, 1 Harrison Road, Halifax.
,,	18	Roseyards, co. Antrim—Church	—	S. J. M'Fadden, Architect, Queen Street, Coleraine.
,,	18	Preston, Lancs—Buildings for Refuse Destructor, &c.	Corporation	Borough Surveyor, Town Hall, Preston.
,,	18	Macclesfield—Annexe Superstructure	—	H. Bewick, County Architect Newgate Street, Chester.
,,	20	Rowley Regis—School	School Board	Meredith & Pritchard, Architects. Bank Buildings Kidderminster.
,,	20	London, N.—Underground Conveniences	Islington Borough Council	J. P. Barber, Borough Engineer, Town Hall, Upper Street, N
,,	20	Pontypool—Church and School	—	Swash & Bain, Architects, Midland Bank Chbrs., Newport, Mon.
,,	20	Swindon—Engine-House, Boiler-House, &c.	Corporation	Borough Surveyor, Town Hall, Swindon
,,	20	Tamworth—Infirmary	Guardians	J. W. Godderidge, 4 Bolebridge Street, Tamworth.
,,	21	Edinburgh—Fireclay Bricks and Retorts, &c.	Gas Commissioners	Chief Engineer, Gasworks, New Street, Edinburgh.
,,	21	Manor Park, E.—Sorting Office	Commnrs. of H.M. Works, &c.	J. Wager. H.M. Office of Works, &c, Storey's Gate, S.W.
,,	21	Walham Green—Sorting Office	Commnrs. of H.M. Works, &c.	J. Wager, H.M. Office of Works, &c., Storey's Gate, S.W.
,,	21	Kentish Town. N.W.—Sorting Office	Commnrs of H.M. Works. &c.	J. Wager, H.M Office of Works, &c, Storey's Gate, S.W.
,,	22	London, S.W.—Disinfector House, &c.	Metropolitan Asylums Board	A. & C. Harston, 15 Leadenhall Street, E.C.
,,	24	Walsall—Bricks, Cement, &c.	Rural District Council	F. W. Mager, District Surveyor, Council Offices, Aldridge, Walsall
,,	27	Thistle Hill, near Knaresboro'—Isolation Hospital	—	G. H. Stanger, Architect, Queen's Chambers, North Street, Wolverhampton.
,,	29	Fowey, Cornwall—Masonry Lighthouse Tower	Harbour Commissioners	W. T. Douglass, 15 Victoria Street, Westminster, S.W.
May	1	Exminster. Devon—Asylum Buildings	—	E. H. Harbottle, County Chambers, Exeter.
,,	1	Sunderland—Electrical Sub-station, &c.	Corporation	J. F C. Shell. Borough Electrical Engineer, Town Hall, Sunderland
,,	11	Deptford—Municipal Buildings	Borough Council	W. T. Farthing & Son, 46 Strand, W.C.
,,	12	Camberwell, S.E.—Public Baths and Washhouses, Underground Convenience.	Borough Council	C. W. Tagg, Clerk, Town Hall, Camberwell, S.E.
No date		Arddleen, Pool—School and Classroom	—	G. Dickens-Lewis, Architect, Talbot Chambers, Shrewsbury.
		ENGINEERING·		
April	9	Colwyn Bay—Foreshore Improvements	Urban District Council	W. Jones Engineer, Council Offices, Colwyn Bay, North Wales.
,,	9	Spezia, Naples, Venice and Taranto—Electrical Cables and Wire.	Italian Navy	Directorate-General of Royal Arsenals at Spezia.
,,	9	Aldershot—Electrical Plant	Urban District Council	Engineer, 126 Victoria Road Aldershot.
,,	9	Kearsley, near Farnworth, Lancs—Relaying Tramways	Urban District Council	H. Nuttall, 20 Market Street, Bury.
,,	10	Manchester—Electrical Switchboard	Trafford Power and Light Supply, Ltd.	Lacey, Clirehugh & Sillar, 2 Queen Anne's Gate, Westminster.
,,	10	Belfast—Boiler	Gas and Electrical Committee	V. A. H. M'Cowen, City Electrical Engineer, East Bridge Street, Belfast.
,,	11	Bollington, near Macclesfield—Reservoir	Urban District Council	W. H. Radford, Engineer, Albion Chambers, King St., Nottingham.
,,	11	London, N.—Electrical Plant	Finchley Urban District Council	E. Calvert, Council's Electrical Engineer, Broadway, Finchley.
,,	11	Ramsgate—Rebuilding Retort House	Gas and Water Committee	T. N. Ritson, Engineer, Boundary Road, Ramsgate.
,,	11	Saffron Walden, Essex—Repairs to Pump and Well	Rural District Council	A. Pitstow, Faircroft Road, Saffron Walden.
,,	11	Yeovil—Waterworks	Corporation	Borough Surveyor, Municipal Offices, Yeovil.
,,	13	Penmaenmawr, Wales—Steel Jetties	Urban District Council	R. J. Hughes, Surveyor District Council Offices, Penmaenmawr
,,	13	Edinburgh—Carbons, Cast-iron Pavement Boxes, &c.	City Council	Resident Engineer, 5 Dewar Place, Edinburgh.
,,	14	Burnham, Somerset—Gas Plant	Gas Co.	J. H. Cornish, Gasworks, Bridport, Dorset.
,,	15	Kinsale, Ireland—Repairing Reservoir	Rural District Council	R. Evans, 53 South Mall, Cork.
,,	15	Templemore, Ireland—Waterworks	Urban District Council	Moynham & Gill, Engineers, Nenagh.
,,	16	Manchester—Motors	Electricity Committee	F. E. Hughes, Secretary, Electricity Department, Town Hall, Manchester.
,,	16	Barrow-in-Furness—Waterworks	Corporation	A. H. Strongitharm, Engineer, Ramsden Sq., Barrow-in-Furness
,,	17	Croydon—Destructor Furnaces, &c.	Town Council	Deputy Borough Engineer, Town Hall, Croydon.
,,	18	Colne, Lancs Coke Conveyor	Gas Committee	F. Thorpe, Engineer, Gasworks, Colne.
,,	18	Batley—Eight Electrical Tramcars	Corporation	Lacey, Clirehugh & Sillar, 2 Queen Anne's Gate, Westminster.
,,	18	Darlington—Overhead Equipment, &c.	Corporation	H. G. Steavenson, Town Clerk, Darlington.
,,	18	Eccles, Lancs—Free Wiring	Corporation	H. W. Angus, Borough Electrical Engineer, Electricity Works, Cawdor Street, Patricroft.
,,	18	Eccles, Lancs—Electrical Plant	Corporation	H. W. Angus, Borough Electrical Engineer, Electricity Works, Cawdor Street, Patricroft.
,,	18	Glastonbury—Incandescent Lamps	Gas Committee	D. E. Garlick, Manager, Gasworks, Glastonbury.
,,	21	Bridlington—Electric Lighting Plant	Corporation	F. H. Medhurst, Page & Lloyd, 13 Victoria Street, Westminster, S.W
,,	21	Limerick—Wiring	—	J, Enright, 202, Hollan's Road, Kensington, S.W.
,,	21	Maidenhead—Dynamo, &c.	Corporation	Burstall & Monkhouse, 14 Old Queen Street, Westminster, S.W.
,,	21	Calcutta—Sewage Pumping Plant	Corporation	Chief Engineer, 2 Municipal Office Street, Calcutta.
,,	21	Daventry—Water Supply Works	Borough Council	Borough Surveyor, Moot Hall, Daventry.
,,	22	New Cross, S.E.—Fire Main and Hydrants	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.

Complete List of Contracts Open —*continued.*

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
		ENGINEERING—*cont.*		
April	23	London, S.W.—Steamboat	Lords Commissioners of the Admiralty.	Secretary to the Admiralty, Ship Branch, Whitehall, S.W.
,,	24	Londonderry—Electrical Plant	Corporation	Preece & Carden, 8 Queen Anne's Gate, Westminster, S.W.
,,	27	Ipswich—Electrical Plant	Corporation	W. Bantoft, Town Clerk, Town Hall, Ipswich.
,,	27	Castlewellan, co. Donegal—Railway Extension	Gt. Northern Rlwy. Co. (Ireland)	W. H. Mills, Engineer in-Chief, Amiens Street Terminus, Dublin
,,	29	Fowey. Cornwall—Masonry Lighthouse Tower	Harbour Commissioners	W. T. Douglass, 15 Victoria Street Westminster, S.W.
May	2	Central Australia—Railway	South Australian Government	Agent-General for South Australia, London.
,,	9	Lisbon—Metal and Stone Bridge	Ministry of Public Works	Commercial Intelligence Branch of Board of Trade, 50 Parliamen Street, S.W.
,,	12	Cairo, Egypt—Electrical Power Transmission	Egyptian Government	Public Works Department, Cairo.
July	1	Rangoon—Electric Supply Undertaking	Municipal Committee	Ogilvy, Gillanders & Co., 67 Cornhill, E.C.
		FURNITURE:		
April	15	Dorchester—Furniture	Guardians	W. W. Reed, 24 High West Street, Dorchester.
		IRON AND STEEL:		
April	9	Leeds—Water Main	Corporation	City Engineer, Town Hall, Leeds.
,,	15	Stockport—Cast-iron Pipes	Gas and Electricity Committee	S. Meunier, Engineer, Stockport.
,,	16	Leeds—Castings	Sewerage Committee	City Engineer, Leeds.
,,	18	Bingley, Yorks—Castings	Urban District Council	H. Bottomley, Surveyor, Town Hall, Bingley.
,,	21	Edinburgh—Castings, &c.	Gas Commissioners	Chief Engineer, Gasworks, New Street, Edinburgh.
,,	22	Amsterdam—Bridgwork, Wagons, &c.	Netherlands Minister of Colonies	Mart. Nyhoff, 18 Nobelstraat, The Hague.
,,	23	Bradford—Ironwork for Ornamental Gates and Fencing	Corporation	Town Clerk, Bradford.
,,	24	Walsall—Castings	Rural District Council	F. W. Mager, District Surveyor, Council Offices, Aldridge, Walsal
June	15	Bangkok, Siam—Permanent-way Materials	Royal Siamese State Railways	Director-General, Gehots, Bangkok.
,,	15	Bangkok, Siam—Railway Stores	Royal Siamese State Railways	Siamese Legation, London.
		PAINTING AND PLUMBING:		
April	20	Tolworth—Whitewashing, Painting, &c., at Hospital	——	Miss Freeman, Superintendent, Hospital, Red Lion Lane, Tolworth.
,,	21	Edinburgh—Oil and Paints	Gas Commissioners	Chief Engineer, Gasworks, New Street, Edinburgh.
,,	28	London, W.C.—Painting, Repairs, &c.	St. Giles and St. George Guardians, Bloomsbury.	J. Appleton, 57 Broad Street, Bloomsbury, W.C.
		ROADS AND CARTAGE:		
April	9	Chelmsford—Materials	Town Council	G. H. Sasse, 16 London Road, Chelmsford.
,,	10	Llwynypia, Wales Roads &c.	——	Surveyor, Excelsior Buildings, Tonypandy.
,,	10	Chelmsford—Making-up-Streets	Rural District Council	H. G. Warne, Surveyor, Avenue Chambers, Market Rd., Chelmsford.
,,	11	Rastrick—Street	——	G. & G. H. Crowther, 38 New Street, Huddersfield.
,,	11	Stafford—Road Metal, &c.	County Council	J. Moncur, Chief Surveyor of Main Roads, County Bldgs., Stafford.
,,	11	Fulwood, near Preston, Lancs—Materials and Cartage	Urban District Council	Surveyor, Council Offices, Fulwood.
,,	13	Westbury, Wilts—Scarifying Roads, &c.	Rural District Council	W. H. Stanley, District Surveyor, Trowbridge.
,,	14	London, S.W.—Making-up and Paving	Wandsworth B.C.	H. G. Hills, Town Clerk, Council House, East Hill, Wandsworth.
,,	14	Mansfield—Making-up (Two Contracts)	Corporation	R. F. Vallance, Borough Surveyor, White Hart Chbrs., Mansfield.
,,	14	Woolston, Hants—Public Street Works	Itchen U.D.C.	T. A. Collingwood, Surveyor, Council Offices, Portsmouth Road, Woolston, Hants.
,,	14	Woolston, Hants—Private Street Works	Itchen U.D.C.	T. A. Collingwood, Surveyor, Council Offices, Portsmouth Road, Woolston, Hants.
,,	14	Ashford, Kent—Materials, &c.	West Ashford R.D.C.	A. Sims, Highway Surveyor Charing, Kent.
,,	15	Midsomer Norton, Somerset—Road Materials, &c.	Urban District Council	Surveyor, Midsomer Norton.
,,	16	Oakham—Materials, &c.	Rutland County Council	B. A. Adam, Clerk, Oakham.
,,	17	Preston, Lancs—Levelling, Paving &c.	Corporation	Borough Surveyor, Town Hall, Preston.
,,	17	Teddington—Materials	Urban District Council	M. Hainsworth Surveyor, Council Offices, Teddington.
,,	18	Southborough, Kent—Materials	Urban District Council	P. Hanmer, Clerk, Council Offices, Southborough.
,,	18	Spennymoor—Paving, &c.	Urban District Council	C. R. Spencer, Council's Surveyor, Silver Street, Spennymoor.
,,	21	Tottenham—Making-up Roads	Urban District Council	W. H. Prescott, 712 High Road, Totetnham.
,,	24	Walsall—Broken Slag, Granite &c.	Rural District Council	F. W. Mager, District Surveyor, Council Offices Adridge, Walsall.
,,	27	Hanwell, W.—Sewering, Levelling Paving, &c.	Urban District Council	S. W. Barnes, Surveyor, Council Offices, Church Road West, Hanwell, W.
,,	30	Scarborough—Approach Road	Town Council	E. T. Beard & H. W. Smith, Engineers, Town Hall, Scarborough.
		SANITARY:		
April	9	Burton-upon-Trent—Drainage Works	Corporation	G. T. Lynam, Borough Surveyor, Town Hall, Burton-upon-Trent.
,,	9	Castletownbere. Ireland—Sewerage Works	Rural District Council	R. Evans, 53 South Mall, Cork.
,,	9	Hull—Night Soil Collection	Corporation	Inspector of Nuisances, Hanover Square, Hull
,,	9	Southend-on-Sea—Sewer	Corporation	E. J. Elford, Borough Surveyor, Southend.
,,	11	Fulwood, near Preston, Lancs—Earthenware Pipes, &c.	Urban District Council	Surveyor, Council Offices, Fulwood.
,,	11	Killough, Ireland—Sanitary Works, &c.	——	Young & Mackenzie, Architects, Scottish Provident Bldgs., Belfast.
,,	14	Maesteg, Wales—Sewerage Works	Urban District Council	J. Humphreys, Engineer, Town Hall Chambers, Maesteg, Glam.
,,	16	Leeds—Earthenware Pipes	Sewerage Committee	City Engineer, Leeds.
,,	16	Leeds - Lime for Sewage Works	Sewerage Committee	City Engineer, Leeds.
,,	18	Chirk—Sewerage Works	Rural District Council	E. Bremner, Smith & Bremner, 10 Warwick Court, W.C.
,,	20	Newhaven, Sussex—Sewer	Urban District Council	F. J. Rayner, Council's Surveyor, Newhaven, Sussex.
,,	21	Edinburgh—Lime, Pipes, &c.	Gas Commissioners	Chief Engineer, Gasworks, New Street. Edinburgh.
,,	21	Colwyn Bay—Sewerage and Sewage-Disposal Works	Urban District Council	Pritchard, Green & Co., 37 Waterloo Street, Birmingham.
,,	22	Tarporley, Cheshire—Sewerage Works	Urban District Council	B. Latham Parliament Mansions, Victoria Street, Westminster.
,,	23	Balfron, Scotland—Drainage Works	County Council	A. Forbes, 146 Buchanan Street, Glasgow.
,,	24	Walsall—Stoneware Goods and Disinfectants	Rural District Council	F. W. Mager, District Surveyor, Council Offices, Aldridge, Walsall.
		TIMBER:		
April	11	Abergavenny—Oak Posts, &c	Joint Burials Committee	J. T. Rutherford, Clerk, Town Hall, Abergavenny.
,,	11	Harrogate—Timber	Corporation	E. W. Dixon, 14 Albert Street, Harrogate.
,,	21	Edinburgh—Timber	Gas Commissioners	Chief Engineer, Gasworks, New Street, Edinburgh.

List of Competitions Open.

DATE OF DELIVERY.		DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &C.	BY WHOM ADVERTISED.
April	10	Yeovil—Laying-out Land for Town Hall, Municipal Buildings, Markets, &c.	£21, £10 10s.	——	Borough Surveyor, Yeovil.
,,	14	Blackpool—Technical Schools	£60, £25, £15.	£1 1s.	J. S. Brodie, Borough Surveyor, Town Hall, Blackpool.
,,	30	Fenton, Staffs—Library	£60, £30.	£1 1s.	S. A. Goodall, Surveyor, Town Hall, Fenton, Staffs.
,,	30	Sunderland—Alterations to Hall	£100, £50, £25.	£5.	J. W. Moncur, Borough Engineer, Town Hall, Sunderland.
May	13	Stockton-on-Tees—Girls' High School	£25, £15 10s.	——	C. J. Archer, 77 High Street, Stockton-on-Tees.
,,	30	Gillingham, Kent—Public Swimming & Slipper Baths	£20, £10, £5.	——	F. C. Boucher, Clerk to Gillingham U.D.C., New Brompton, Kent.

Coming Events.

Wednesday, April 8.

The Edinburgh Architectural Association (Associates' Meeting). Mr. J. D. Traill on "Woodwork of Louis XIV., XV. and XVI," 8 p.m.

The Japan Society.—Mr. M. Tomkinson on "A Gossip on Japanese Art," 8.30 p.m.

Institute of Sanitary Engineers, Ltd.—Meetings of Examination and Literary Committee at 3.30 p.m., General Purposes and Finance Committee at 4.15 p.m., and the Election Committee at 5.15 p.m.

Monday, April 13.

Bristol Society of Architects —Annual General Meeting. Election of Council and Officers, 8 p.m

Wednesday, April 15.

Edinburgh Architectural Association.—Associates' General Meeting at 8 p.m.

Saturday, April 18.

Edinburgh Architectural Association.—Visit to Edinburgh of the Glasgow Architectural Association.

Monday, April 20.

Royal Institute of British Architects.—Mr. Edwin T. Hall on "Three Hospitals of Different Modern Types," 8 p.m.

Surveyors' Institution.—Mr. H. Trustram Eve on "Modern Methods of Valuation of Manurial Residences." 4 p.m.

Edinburgh Architectural Association (Associates' Section).—Visit to Manderston Castle.

Tuesday, April 21.

Glasgow Architectural Association.—Lecture by Mr. A Hessell Tiltman, F.R.I.B.A.

Architectural Association of Ireland.—Valedictory Address by the President, Mr. Frederick G. Hicks. Election of Officers, 7.45 p.m.

Wednesday, April 22.

Edinburgh Architectural Association.—Annual Business Meeting and President's Valedictory Address by Mr. A. Hunter Crawford.

Chemical Society.—Meeting at 5 30 p.m.

Thursday, April 23.

Society for the Encouragement of the Fine Arts.—Mr. H. Beaumont on "Ruskin's Bible of Amiens."

Institution of Mechanical Engineers.—Anniversary Dinner at the Hotel Cecil.

Friday, April 24.

Institution of Mechanical Engineers.—Meeting at 8 p.m.

New Companies.

R E. & C. Marshall, Ltd., ironmongers, &c, 5, Clarence Street, Cheltenham. Capital: £10.000 in £1 shares.

London and General Disinfectants Co., Ltd., 158, Strand, W.C. Capital: £500 in £1 shares.

S. H. Cross & Co, Ltd., plumbers, glaziers, painters, gas and water fitters, &c. Capital: £200 in £1 shares.

Kitson Incandescent Lighting Co. of South Africa, Ltd., 10 & 11, Austin Friars, E.C. Capital £50,000 in £1 shares.

Sanitaries, Ltd., sanitary engineers, 10, Statham Street, Pendleton. Capital: £12,000 in £1 shares (6,000 preference).

Bogey, Ltd., woodcarvers, wood-workers, moulding manufacturers, &c., 48, London Wall, E.C. Capital: £210 in 30 shares.

Henry Sowter, Ltd., dealers in coal, breeze, stone, road-making materials, bricks, tiles, &c., Marsh Parade, Newcastle, Staffordshire. Capital: £1,000 in £1 shares.

Incorporated Clerks of Works' Association of Great Britain.—Registered with 250 members, each liable for £1 in the event of winding-up.

Feltham. Woodrow & Co., Ltd., land, estate and house agents, surveyors, architects, &c., 178, Coleman Street, E.C. Capital: £3,000 in £1 shares.

Barton-on-Sea Land Co., Ltd., 4, Tokenhouse Buildings, E.C. Capital: £50,000 in £1 shares (30,000 founders')

Woodward's, Ltd., firebrick and crucible manufacturers, brickmakers, &c., 51, Lichfield Street, Wolverhampton. Capital: £1,000 in £1 shares.

Societe Meldrum, Ltd., engineers, manufacturers of Meldrum furnaces, &c., Asnières (Seine), and 5, Rue Greffulhe, Paris. Capital: £1,000 in £1 shares.

Copperas Colour Co., Ltd., colour, paint and varnish manufacturers, &c., Briton Ferry, Glamorganshire. Capital: £20,000 in £50 shares.

Manchester Lamp and Gas Fitting Co., Ltd., 75, Lancaster Avenue, Fennel Street, Manchester Capital £3,000 in £1 shares.

Brixton Syndicate, Ltd, builders, contractors, decorators, dealers in stone, lime, bricks, &c. Capital: £10,000 in £1 shares.

Walma Scar Green Slate Co., Ltd., quarriers and dealers in slate and other stone, Rhydal House, Broughton-in-Furness, Lancashire. Capital: £7,500 in £1 shares.

J. Wheatley & Sons, Ltd, builders, contractors, plumbers, &c., Bridge House Works, East Molesay, Surrey. Capital: £20,000 in £1 shares (10 000 preference).

Erith, Lisney & Co., Ltd., builders' merchants, manufacturers of and dealers in boiler blocks. pipes, sanitary appliances, bricks, &c., 45, Old Ford Row, Bow, E Capital: £30,000 in £1 shares (20,000 preference).

Walter Drabble & Co, Ltd., stone merchant and masonry contractor, Stone Works Matlock Bridge, Derbyshire. Capital: £20,000 in £1 shares (100 management).

Robert Bewsher & Co., Ltd, timber merchants, saw-mill proprietors, &c., Timber Yard, Embleton, near Cockermouth, Cumberland. Capital: £12 500 in £1 shares (5,500 preference).

Marshall, Knott & Barker, Ltd., dealers in timber, doors, joinery, &c., 153, Victoria Street South, Great Grimsby. Capital: £100,000 in 60,000 ordinary shares of £1 each and 8,000 five per cent. preference shares of £5 each.

Bankruptcies.

[Abbreviations: R O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver.]

During the week ending April 4th seven failures in the building and timber trades in England and Wales were gazetted.

H. Hudspith, builder, Gateshead. Liabilities £67.

C. Butler, builder, 20, Bucklersbury, London. Liabilities £469; assets £46.

Pennick & Taylor, builders, Clacton-on-Sea. R.O. March 27th

M. S. Johnson, builder, 58, Kirkdale, Sydenham. R O. March 24th.

F. E. Nicholson, varnish manufacturer, Hull. P.E., Hull C.C., April 27th, at 2.

J. O. Bower, builder, Aberfan, Merthyr Tydfil. P.E., Merthyr Town Hall, May 6th, at 3.

M. & J. Keane, builders and contractors, Maesteg. R.O. March 23rd.

J B. Brez, builder and contractor, late of Weaste. Liabilities £434; deficiency £245

Lummis & Son, builders, Chelmsford. Liabilities £1 443; assets £971.

W. Purkis, builder, Braintree. Liabilities £5,540 5s.; £51 expected to rank; estimated surplus £229 9s. 3d.

A. Ventris, builder, Great Wakening. Liabilities £395; £163 5s. expected to rank; deficiency £130 6s.

C. Cooper & Co. stone merchants, 47 and 48, King William Street, London. P.E, Bankruptcy Court, May 6th, at 11.30

C. Stotter, brick manufacturer, Enfield. First meeting, O.R.'s, 95, Temple Chambers, London, April 8th, at 12. P.E., Edmonton C.C., May 4th, at 11.30.

J. Ashby, builder, Lowestoft. First meeting, O.R's., Norwich, April 8th, at 3. P E., Yarmouth Town Hall, April 21st, at 11.

N. W. K. Godard, builder, Aldrington. First meeting, O.R's., Brighton, April 8th, at 11. P.E., Brighton C.C., April 29th, at 11.

F. J. Rayner, contractor, Slinfold. R.O. March 24th. First meeting, O.R's., Brighton, April 9th, at 2 30. P.E, Brighton C.C, April 29th, at 11.

A. Taylor, surveyor, St. Andrew's Road, Brighton. R.O. March 24th. First meeting, O.R's., Brighton, April 8th, at 4.30. P.E, Brighton C.C., April 29th, at 11.

J. W. Radnedge, builder. Merthyr Tydfil. First meeting, 135, High Street, Merthyr, April 9th, at 12. P.E., Merthyr Town Hall, May 6th, at 3.

G. Merredew, joinery manufacturer, Kingston-on-Thames. First meeting, 24, Railway Approach, London Bridge, April 9th, at 11.30. P.E, Kingston C C., May 5th, at 2 30.

T. Harris, late a builder at Fazakerley, near Liverpool. A first and final dividend of 6s. 3d. in the £ has been paid on debts amounting to £524. Discharge suspended for two years last week.

A. Neesom, builder and contractor, 14, Marley Road, Levenshulme, late of Chorlton-cum-Hardy. First meeting, O.R's., Manchester, April 8th, at 2.30. P.E., Salford C.C., May 5th, at 10.30.

R. S Buckeridge, builder, Harrow Road, London, W. Liabilities £8,213; assets £3,677. Failure attributed to bad debts law expenses, losses through accidents, and high price of labour and materials. P.E., Bankruptcy Court, April 29th, at 11.30.

W. Thompson, builder. 81, Bishopsgate Street, London. E.C. Liabilities £2,128; assets £10. P.E. concluded March 31st. Failure attributed to loss on contracts due to under-estimating; neglect of work by a foreman; and heavy litigation in respect of a building speculation in Marylebone.

Godfrey & Liddelow, civil engineers and contractors, Victoria Street, Westminster. The firm was established in 1889, mainly to carry out a large contract with the Greek Government for the construction of the Piræus and Larissa Railway. The sum of £80,000 was deposited as caution money, and the works were proceeded with, but difficulties arose, and eventually the Greek Government seized the property and works and declared the caution money forfeited. The total amount claimed to be due to the firm in respect of the contract was £453 605 6s. 4d., and to the refusal of the Greek Government to pay the same the bankrupts attributed their failure. It was reported that the assets were not equal to 10s. in the pound, and that the applicant has continued to trade after knowing himself to be insolvent. The Registrar last week suspended the order of discharge for two years.

Current Market Prices.

FORAGE.

		£	s.	d.	£	s.	d
Beans	per qr.	1	9	9	1	12	3
Clover, best	per load	4	7	6	4	15	0
Hay, best	do.	3	15	0	5	10	0
Sainfoin mixture ..	do.	3	15	0	4	5	0
Straw	do.	1	8	0	1	18	0

OILS AND PAINTS.

Castor Oil, French ..	per cwt.	1	1	0	1	2	2
Colza Oil, English ..	do.	1	3	0		—	
Copperas	per ton	2	2	6		—	
Lard Oil	per cwt.	2	13	0	2	14	0
Lead, white, ground, carbonate	do.	1	4	10		—	
Do. red	do.	1	0	4½			
Linseed Oil, barrels ..	do.	1	4	3		—	
Petroleum, American ..	per gal.	0	0	5¼	0	0	5⅝
Do. Russian .	do.	0	0	4⅛	0	0	4¼
Pitch	per barrel	0	8	0		—	
Shellac, orange	per cwt.	5	17	0		—	
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Home Melt ..	per cwt.	1	10	3	1	11	0
Tar, Stockholm	per barrel	1	1	6		—	
Turpentine	per cwt.	2	4	7½		—	

METALS.

Copper, sheet, strong ..	per ton	78	0	0		—	
Iron, Staffs., bar	do.	6	5	0	8	10	0
Do. Galvanised Corrugated sheet ..	do.	11	10	0	11	15	0
Lead, pig, Soft Foreign ..	do.	12	7	6	12	10	0
Do. do. English common brands	do.	12	15	0	12	17	6
Do. sheet, English 3lb. per sq. ft. and upwards	per ton	14	10	0		—	
Do. pipe	do.	15	0	0		—	
Nails, cut clasp, 3in. to 6in.	do.	9	5	0		—	
Do. floor brads	do.	9	0	0		—	
Steel, Staffs., Girders and Angles	do.	5	15	0	6	7	6
Do. do. Mild bars ..	do.	6	12	6	7	2	6
Tin, Foreign	do.	137	0	0	137	10	0
Do. English ingots ..	do.	139	0	0	139	10	0
Zinc, sheets, Silesian ..	do	24	0	0		—	
Do. do. Vieille Montaigne	do.	24	10	0		—	
Do. Spelter	do.	22	17	6	23	5	0

TIMBER.

Soft Woods.

Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow ..	do.	5	5	0	6	5	0
Do. Pitch	do.	3	0	0	3	4	0
Laths, log, Dantzic ..	per fath.	4	10	0	5	10	0
Do. Petersburg ..	do.	7	5	0		—	
Deals, Archangel, Yellow— 4th, 3×9 ..	per P.Std.	10	15	0		—	
Do. Riga	do.	6	15	0	12	10	0
Do. Petersburg 1st Yellow, 3×11	do.	20	5	0		—	
Do. Sandarne, 3rd Yellow, 3×9	do	10	10	0		—	
Do. Sapelo Pitch Pine 3×10	do.	8	5	0		—	
Do do. do 3×9	do.	8	5	0	9	10	0
Do. Wyburg. 1st and 2nd Yellow, 2×4	do.	8	15	0		—	
Do Torneå, 1st Yellow, 4×9	do.	13	5	0		—	
Do. do. do. 3×9	do.	11	15	0		—	
Do. do. do. 2×9	do.	12	10	0		—	
Do do do. 3×7	do.	9	10	0		—	
Do. Mesane, 3rd Yellow, 3×9	do.	13	10	0	13	15	0
Do. Hörnefors, 1st and 2nd Yellow, 3×6 ..	do.	8	10	0		—	
Do. Sandvik, 3rd Yellow 2×5	do.	6	15	0		—	
Do. do 1st and 2nd White, 2×4	do.	8	0	0		—	
Do. Kovda, Yellow— 3rd 3×9	do.	13	5	0		—	
4th 3×11	do.	9	10	0		—	
Do Skellefteå Yellow, 3rd 3×9	do.	14	15	0		—	
Do do. do. 1st & 2nd 2×9	do.	14	0	0		—	
Do. do. Inferior, 5th 4×9	do.	8	10	0		—	
Do. Petschora, Yellow, 3rd 3×11	do.	10	10	0		—	
Do. do. do. 4th 3×11	do.	8	10	0	8	15	0
Do. Luleå. 1st Yellow 4×11	do.	12	0	0		—	
Do. Keni (Archangel), 3rd Yellow 3×9	do.	12	15	0		—	
Do. Quebec Red Pine, 2nd 3×9	do.	9	10	0		—	
Do. do. do. 3×7	do.	7	15	0		—	
Do. Oserko, Yellow, 4th 4×9	do.	11	10	0		—	
Do. do. do. 3×9	do	10	10	0		—	
Do. do. do. 5th 4×9	do.	10	0	0		—	
Do. Galatz, 3rd White 3×11	do.	8	17	6		—	
Do. Pitea, Unsorted Yellow 3×9	do.	10	5	0		—	
Battens, all kinds ..	do.	6	10	0	12	0	0
Flooring Boards 1in. prepared, 1st	per square	0	11	3	0	12	0
Do. 2nd	do.	0	8	3	0	11	0
Do. 3rd &c.	do.	0	7	6	0	10	0

Hard Woods.

Ash, Quebec	per load	3	12	6		—	
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	15	0	0	20	0	0
Cedar, Cuba	per ft. sup.	0	0	5¼		—	
Do. Honduras ..	do.	0	0	$4\frac{15}{16}$		—	
Do. Tobasco	do.	0	0	$4\frac{13}{32}$		—	
Elm, Quebec	per load	4	0	0	5	2	6

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

Bathgate.—Accepted for the erection of two houses and alterations and additions to the Police Buildings in Med Street, for the Standing Joint Committee of the Linlithgow County Council. Mr. Edward C. H. Maidman, architect, 13, South Charlotte Street, Edinburgh. Quantities by Mr. W. H. Francis, 122, George Stree, Edinburgh:—

Masonwork—Mr. Thomas Binnie Bathgate.
Joinerwork—Messrs. John Spiers & Sons, Bathgate.
Slater and Plasterwork—Mr. Henry Morrison, Bathgate.
Plumberwork—Messrs. Burn & Baillie, Edinburgh.
Heating engineers—Messrs. Mackenzie & Moncur, Edinburgh.

£1,529 5s. 4d.

Bedford.—For additions to the Clapham Road Schools, Bedford, for the Bedford School Board. Mr. Henry Young, architect and surveyor, Maitland Street, Bedford:—

Pryer	£722	15	6
Corby & Son	672	0	0
Walker	672	0	0
Freshwater & Son	670	0	0
Harrison	670	0	0
Negus	651	0	0
Warton	6,4	0	0
Foster*	625	0	0

* Accepted. [All of Bedford.]

Brynmawr (Wales).—For supplying, laying and jointing of about 2,581 lineal yards of 7in. diameter, along with about 7,941 yards of 4in. and 3in. diameter cast-iron socket pipes, including all necessary sluice valves, air-valves, hydrants, and other works in connection therewith for the water supply of the township of Brynmawr, for the Brynmawr Urban District Council. Messrs. Haller & Machell, engineers, Corporation Chambers, Dewsbury:—

J. Monks & Co, Newport	£4,221	5	1
Barnes, Chaplin & Co., Cardiff	4,183	4	10
N. Bagley, Abertillery, Mon.	3,896	0	6
E. H. Page, Cardiff	3,684	5	2
M. Thompson & Son, Briton Ferry, Glamorgan	3,625	6	8
E. Powell, Conwil, Elvet, Carmarthen	3,597	2	0
J. G. Rutter & Sons, Durham	3,580	4	4
Garforth Brothers, Mirfield, Yorks	3,465	0	8
W. Brown & Son, Liverpool	,415	6	0
N. Shardlow, Nottingham	3,351	13	4
W. Doleman,* Dewsbury	3,297	2	0

NOTE.—House connections, &c, by W. Doleman, separate schedule.

* Accepted.

Cotford (near Taunton).—For the erection of additional blocks for 300 patients at the Cotford Asylum, near Taunton, for the Committee of Visitors. Messrs. George T. Hine & Co., architects, 35, Parliament Street, Westminster:—

E. Ellis & Son, Bideford	£47,944	19	10
Pethick Brothers, Plymouth	37,444	0	0
Wakeham Brothers Plymouth	36,033	0	0
T. Broad, Ltd., Great Malvern	35,859	0	8
Howe & Co., West Hartlepool	35,577	16	0
Westcott, Austin & White, Exeter	34,399	0	0
H. J. Spiller & Son, Taunton	34,281	0	0
McCormick & Sons, London, N.	33,544	0	0
Dart & Pollard, Paignton	33,200	0	0
D. W. Davies and C. Morgan, Cardiff	33,047	0	0
A. J. Beaven, Bristol	33,000	0	0
Stephens, Bastow & Co., Bristol	32,651	0	0
W. E. Blake, Plymouth	32,510	0	0
J. Shillitoe & Son, Bury St. Edmunds	32,000	0	0
A. N. Coles, Plymouth	31,872	9	7
G. Pollard & Co., Ltd., Taunton	31,437	0	0
Moss & Sons, Ltd., Loughborough	£30,937	15	7
Hayward & Wooster, Bath	30,844	0	0
H. Willcock & Co., Wolverhampton	30,560	0	0
Stephens & Son, Ltd., Exeter	30,355	0	0
W. King & Son, London, S.W.	30,207	0	0
H. W. Pollard,* Bridgwater	29,470	0	0

* Accepted.

Crayford (Kent).—For the erection of new schools, Northend, for the Crayford School Board. Mr. C. L. Morgan, architect, 43, Cannon Street, E.C.:—

J. Smith & Sons, Ltd, South Norwood, S.E.	£7,881
G. Miles, Erith	7,611
Thomas & Edge, Woolwich	7,390
W. H. Archer, Gravesend	7,294
H. L. Holloway, Deptford	7,241
F. Spencer & Son, Erith	7,113
R. A. Lowe, Chislehurst	6,999
W. Lawrence & Son, Waltham Cross, N.	6,504
J. Lonsdale, Swanley Junction	6,564
Friday & Ling,* The Nursery, Northend, Erith	6,494

* Accepted subject to modification and approval by the Board of Education.

Curragh Camp (Ireland).—For the erection of a Methodist manse at the Curragh Camp, co Kildare, for the Army and Navy Committee of the Methodist Church in Ireland:—

Hamilton & Titterington, Dublin	£1,719	0	0
J. Pile, Dublin	1,695	0	0
G. Langley, Dublin	1,663	0	0
Collin Brothers, Ltd, Dublin and Belfast	1,650	0	0
Sheridan, Newbridge	1,567	1	8
O'Mahoney, Fermoy	1,417	0	0
A. Hull & Co, Dublin	1,390	0	0
Coventry & Co., Dublin	1,350	0	0
J. & R. Thompson, Dublin	1,348	0	0
McKie & McNally, Dungannon	1,333	8	3
J. Kidd, Belfast	1,318	0	0

NOTE.—The lowest tender representing more than the Committee wished to lay out, the project was abandoned.

Grays (Essex).—For the erection of the Carnegie Free Library in Orsett Road, Grays. Mr. Christopher M. Shiner, A.R.I.B.A., architect, 6, 7 and 8, Crutched Friars, E.C.:—

Davey, Limited	£2,765	0
J. Brown	2,726	5
H. R. Rons	2,685	0
J. S. Hammond	2,643	0
G. Prentis	2,633	0
W. Potter	2,627	0
H. J. Carter	2,573	0
Sheffield Brothers	2,557	0
S. E. Moss*	2,336	4

* Accepted.

Grays (Essex).—For the erection of a dwelling-house in Orsett Road Grays. Mr. Christopher M. Shiner, A.R.I.B.A., architect, 6, 7 and 8, Crutched Friars, E.C.:—

W. Potter	£1,089	0
G. Brown	1,075	10
J. J. Lawrence	1,041	15
G. Prentis	1,040	0
J. S. Hammond	1,034	0
J. Brown*	1,013	0

* Accepted.

Lesmahagow (Scotland).—For laying-out as an extension to the Lesmahagow Cemetery above three acres of ground and building boundary walls, for the Parish Council:—

A. Stark & Sons, Glasgow	£2,998	7	9
W. H. Boyd, Fairhill, Larkhall	,934	3	6
J. J. Ashton, Manchester	2,784	16	3
R. Gibson, Glasgow	2,541	15	0
R. C. Brebner & Co., Edinburgh	2,,64	17	0
D. Prentice, Brocketsbrae, Lesmahagow	2,[illegible]19	17	4
W. Gow & Sons, Kilsyth	2,256	12	6
G. & A. Donald, Shettleston	2,111	0	0
J. Black & Co.	2,037	10	10
J. Black, jun. Hamilton	1,881	5	2
J. & D. Griffin, Glasgow	1,868	16	6
R. Crawford, New Cumnock, Ayrshire	1,864	1	6
A. Donald, Strathaven	£1,741	3	2
W. Donald, Uddingston	1,737	8	8
W. Clarkson, Lesmahagow	1,723	7	0
W. Scott, Strathaven	1,637	17	6
C. Clarkson,* Wellwood, Lesmahagow	1,580	18	4

* Accepted.

London.—For the demolition and rebuilding premises Nos. 16, 17, and 18, Union Street and Nos. 1 and 2, Candover Street, W., exclusive of sanitary, electrical and gas-fitter's work. Messrs. H. Fuller Clark & Percy A. Boulting, architects, No. 30, John Street, Bedford Row, W.C.:—

Langdale & Hallett	£9,800
Burman & Sons	9,396
James Smith & Sons South Norwood	9,[illegible]69
A. A. Webber	9,103
John Anley & Son	9,086
Smith & Co,* Mount Street, W.	8,950

* Accepted.

London.—Accepted for reinstating damage done by fire to stabling at Ilford, E. Messrs. Foulsham and Herbert Riches, architects, 3, Crooked Lane, King William Street, E.C., and Bromley-by-Bow, E.:—

F. Willmot	£135

London.—Accepted for addition to house, South Woodford, N.E. Mr. Herbert Riches, architect, 3, Crooked Lane, King William Street, E.C.:—

Sheffield Brothers	£300

London.—Accepted for decorations, &c., to house, Wanstead N.E. Mr. Herbert Riches, architect, 3, Crooked Lane, King William Street, E.C.:—

H. A. Barns	£183

London.—Accepted for decorations to offices, Fenchurch Avenue, London, E.C. Mr. Herbert Riches, architect, 3, Crooked Lane, King William Street, London, E.C.:—

W. Hawtrey & Son	£120

London.—For repairs at "The Clarendon Hotel," Tidal Basin, E. Messrs. Foulsham and Herbert Riches, architects, 3, Crooked Lane, King William Street, E.C., and Bromley-by-Bow, E.:—

J. T. Robey	£385
A. W. Derby	379
T. Osborn & Sons	321
S. Salt & Sons*	313

* Accepted.

London.—For outside painting work and repairs at "The Milkwood Tavern," Loughboro', S.E. Messrs. Foulsham and Herbert Riches, architect, 3, Crooked Lane, King William Street, London, E.C., and Bromley-by-Bow, E.:—

F. & H. F. Higgs	£298
T. Osborn & Sons	285
Courtney & Fairbairn	279
J. Hooper*	264

* Accepted.

London.—For forming cellars for storage, loading stages, &c., Gardeners Lane, Putney, S.W. Messrs. Foulsham and Herbert Riches, architects, 3, Crooked Lane, King William Street, E.C., and Bromley-by-Bow, E. Quantities supplied:—

Burman & Sons	£3,450
F. & T. Thorne	3,350
Todd & Newman	3,268
Sheffield Brothers	3,211
Parsons & Co.	3,166
Courtney & Fairbairn	3,147
Adamson & Sons	3,117
Green & Smith	3,105
W. R. Williams*	2,997

* Accepted.

Margate.—For the construction of a new iron high-service tank at Woodlands, Adisham, Kent, for the Margate Waterworks Committee. Mr. A. Latham, M.I.C.E. engineer, 15, Cecil Square, Margate:—

G. Browning, Canterbury	£2,328	0	0
Paramor & Sons, Margate	2,120	15	6
W. J. Adcock, Dover	2,061	16	0
T. T. Denne, Walmer	1,9[illegible]3	8	8
W. W. Martin,* Ramsgate	1,928	14	0

* Accepted.

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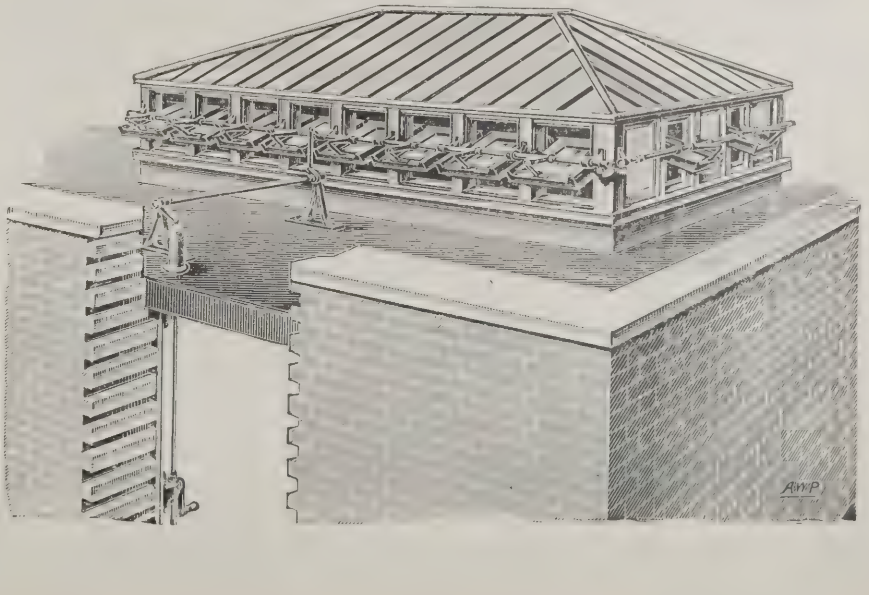

TENDERS (*cont. from* p. xv).

Margate.—For the construction of a new reservoir in concrete at Uffington, near Wingham, Kent, for the Margate Town Council. Mr. A. Latham, M.I.C.E., engineer, 15, Cecil Square, Margate:—

	£	s.	d.
Tuff & Miskin, Rochester	£1,903	7	1
G. H. Denne & Son, Deal	1,365	0	0
A. Fosey, Leytonstone	1,359	6	11
T. T. Denne, Walmer	1,247	0	0
G. Browning, Canterbury	1,226	0	0
Paramor & Sons, Margate	1,199	0	0
Castle & Co., Westgate	1,145	18	7
W. J. Adcock, Dover	1,051	19	8
G. Bell,* Tottenham	953	0	0

* Withdrawn.

Morpeth.—For the work in connection with the new cattle market, comprising (a) the formation of roads; (b) the erection of offices, iron bar division fences, gates, and fencing; (c) the laying of drains with manholes, &c., preparing for and laying with cement concrete the entire site, for the Corporation:—

	£	s.	d.
F. Hepple, Newcastle	£2,324	16	5
T. Weir, Howdon-on-Tyne	2,300	0	0
G. Wells, Harton, South Shields	2,175	4	8
G. Dixon, Morpeth	2,147	19	11
W. Hogg, Pegswood	2,086	2	0
Hadfield & Co., Sunderland	1,909	0	0
R. Walker, Bedlington	1,960	0	0
G. Hollings, Wallsend	1,930	0	0
J. T. Robson, Newcastle	1,912	0	11
Gordon Brothers, Stafford	1,869	0	0
M. Young,* Elm Grove, Hexham	1,845	5	0

* Accepted. [Surveyor's estimate, £1,930.]

Oxford.—For enlargement of the Oxford head post office, for H.M. Office of Works, &c.:—

	£	s.	A £	A s.
Foster Brothers	£7,763	0	£100	0
Symom & Co.	6,577	0	50	0
Organ Brothers	6,322	10	110	12
T. H. Kingerlee & Sons	6 116	0	258	2

A.—For old material.

Pengam (Wales).—For the erection of twenty-five dwelling-houses at Fleur-de-lys, Pengam, for the Fleur-de-Lys Building Club (No. 3). Mr. George Kenshole, architect Station Road, Bargoed:—

	£	s.
C. Sara, Cardiff	£4,825	0
Davies & Francis, Pontlottyn and Barry Dock	4,687	10
J. Howells, Caerphilly	4,500	0
W. Yeo, Pengam	4,350	0
S. E. Thomas, Bargoed	4 280	0
T. Matthews,* Bedwas and Pengam	4,250	0

* Accepted.

Stifford (Essex).—For alteration of the existing schools, a new infants' school, and two houses for the headmaster and caretaker, for the Stifford School Board. Mr. Christopher M. Shiner, A.R.I.B A., architect, 6, 7 and 8, Crutched Friars, E.C., and Grays, Essex:—

	£	s.	d.
J. Brown	£7,353	0	0
J. S. Hammond	7,050	0	0
W. Smith	6 977	0	0
S. Parmenter	6,957	0	0
Davey, Ltd.	6,914	0	0
W. Potter	6,842	0	0
E. West	6,781	0	0
H. R. Rons	6,697	0	0
S. E Miss	6,290	18	0
Pavitt & Son	6,255	12	8
C. Watt	6,050	0	0
H. J. Carter*	5,755	0	0

* Accepted.

Stonehaven (N.B.).—For laying and supplying cast-iron water-pipes, for the Town Council of the Burgh of Stonehaven. Mr. G. Murdoch, burgh surveyor. Quantities by surveyor:—

	£	s.	d.
J. Walker	£1,948	10	3
Mitchell & Sons	1,710	17	6
J. Murray	1,544	15	3
A. McKay	1,491	7	0
T. S. Dick	1,477	15	6
W. Smith, jun.	1,465	9	9
Blackie & Sons	1,457	0	0
Laing & Sons	1,447	0	0
J. Ross,* 61, Barclay Street, Stonehaven	1,387	15	0

* Accepted.

Tilbury Dock (Essex).—For the erection of five shops in Dock Road, Tilbury Dock. Mr. Christopher M. Shiner, A.R.I.B.A., architect, 6, 7, and 8, Crutched Friars. E.C., and Grays, Essex:—

	£	s.
J S. Hammond	£2,389	0
S. E. Moss	2,060	15
J. Brown	1,974	0
J. J. Lawrance	1,925	0
G. Brown*	1,675	0

* Accepted.

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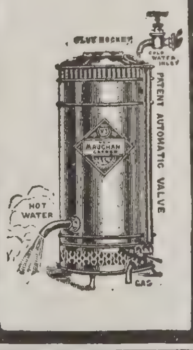

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THE COUNCILS JOURNAL.

MONTHLY, SIXPENCE.

The Councils Journal, the organ of the Parish and District Councils Association, circulates amongst members and officials of Town, District and Parish Councils, Boards of Guardians, School Boards, &c., &c., and publishes a monthly column, "The Work of the Councils," giving information as to Building Works, Sewerage, Gas and Water Schemes proposed by local bodies.

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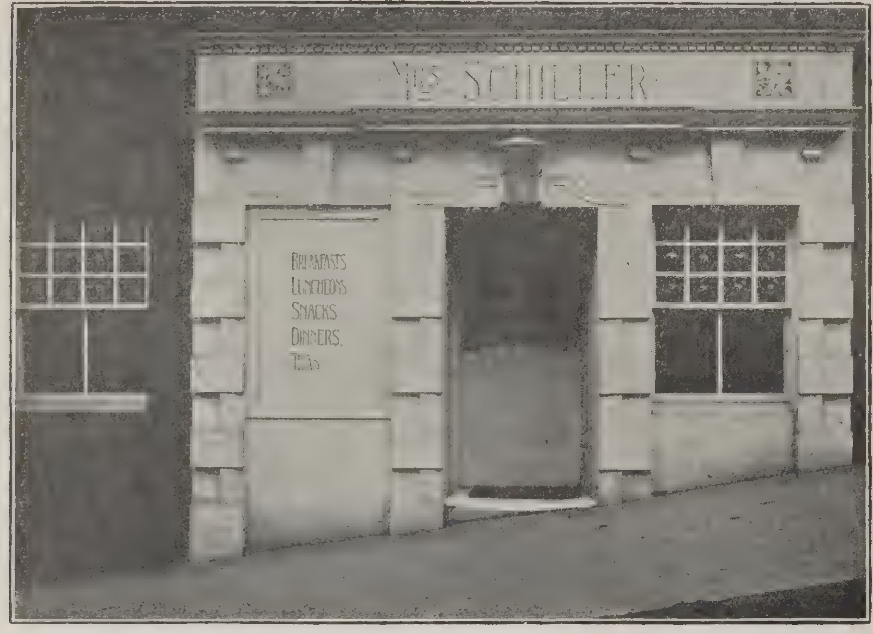
THE
BUILDERS' JOURNAL
AND ARCHITECTURAL RECORD.

April 15, 1903. Vol. 17, No. 427.

9, East Harding Street, E.C.

The R.I.B.A. and Registration. The circular issued by the Society of Architects, headed "A Government Diploma for Architecture," has drawn from the Royal Institute some sort of an official declaration against architectural registration; but the arguments advanced can hardly be called conclusive. We readily appreciate that the scheme has its defects—grave defects, perhaps—and we cannot feel equally zealous as the promoters express themselves to be; still, looking at the present condition of things, it would seem to be the lesser of two evils. The Institute "pronouncement" takes the form of a memorandum sent to the presidents of the allied societies. "In the event of any further steps being taken towards legislation in the matter, the Council will be prepared on learning the particulars to forward an amplification of their views." Meanwhile the presidents are desired to ascertain the general opinion of their societies, and afterwards to meet Mr. Aston Webb in conference "on matters vitally affecting the interests of architecture throughout the country." It is asked in the memorandum what chance there would be of passing the measure if it meant that engineers must design no more bridges or railway stations, and surveyors no more buildings on the estates they manage; and also, how legal registration could decide who should call himself an architect and who not. But, as we understand the scheme, it is clear that only those persons would be allowed to practise as architects who had passed the official examination: it would make no difference if a man were an engineer as well, while, as to surveyors, any measure is to be welcomed which is in the least likely to improve the type of house generally spluttered over "estates"—and we recollect that the Institute is itself particularly anxious that borough surveyors and engineers should not be given the architectural work of their towns. It is of course impossible to examine a man in his "art," but if we believe that a study and knowledge of past styles, past construction, past decoration, are essential to everyone who professes to be an architect, and that such study is conducive to an improvement in taste, then we must see that "surveyors" who undertook architecture would be the better for such training. The memorandum continues: "Architecture claims to be one of the liberal arts, akin to the art of the painter, the sculptor and the musician; and if they do not seek protection from the charlatans in their respective arts, why should we?" Architecture, however, is vastly more permanent than those arts, dealing with essential solidities: and it is not so much the charlatan as the incompetent practitioner who inflicts the most harm. The Institute suggests that if legislation is needed to protect the public from bad construction it should be directed against the speculative builder, who should be required to pass a building examination: while, "if the idea be to protect the public against bad art, can can any legal registration do this?" But, looking at the facts, how could speculative builders be required to pass any examination?—they are generally ignorant money-makers, and the strict administration of the by-laws is the only thing to which we can look for any remedy at present. It seems to us that the Institute, not having started the scheme itself, will not consider it without prejudice. We regret that this is so, as architectural registration can never hope to receive Parliamentary assent without its support. Maybe something will result from the forthcoming conference.

St. Mary Aldermary. We hardly expect to find Gothic in the City. A few days after the Great Fire "Doctor Wren" ascended the tower of St. Saviour's Church in Southwark and, looking upon the still smoking ruins on the northern bank, he sketched out a city which he intended should be wholly Palladian. Custom and tradition, however, were too much for him in many places: Gothic lingered in England after it died out elsewhere; it is found with Classic or Renaissance details in what is called "Oxford Gothic," also in a species of quasi-Gothic detail here and there, and can be clearly distinguished from the Gothic Revival of a later date. The English people were loth to part with their traditional architecture, and public opinion, influenced by sentiment and association, insisted upon more than one Gothic design from the hands of the great master of "Italian." To this cause we owe a few buildings in London, Oxford and elsewhere which are quite anomalous in style but saved by some intrinsic merits from failure or ugliness. One of the best of these is St. Mary Aldermary, a church one flank of which has been "disengaged" by the creation of Queen Victoria Street, the west door being entered from Bow Lane. Tradition asserts that after the fire the parishioners demanded that their new church should be as nearly as possible a reproduction of the one just burnt; this is not improbable, but another reason may have had even greater weight with the king's Surveyor-General, that the fabric was far from consumed; the tower, a very fine one, lofty and well-proportioned, still stood, and had only been scorched and blackened by the flames; the nave, too, was but slightly injured, and the problem was one that must have appealed to the architect's well-known ingenuity. St. Mary's, indeed, is not the only building thus treated by him; how little it is remembered that his first work at St. Paul's was to patch up the ruins of the cathedral into a temporary structure, which was actually used for eight or nine years. St. Mary Aldermary's consists essentially of a nave and two aisles, separated by very slender clustered shafts, with flattened slightly-pointed arches: smaller shafts proceed up the face of the clearstory, and from these spring a succession of elaborate fan vaultings, or, more correctly, ceilings so worked, mainly in plaster; the centre of each—where a carved stone boss or possibly a pendant would be found in a Tudor church—is a circular panel, with deeply indented ornament, and surrounded with elaborate mouldings; shields and foliage enrich the spandrels; the aisles are similarly treated, though the ornament is even richer and the centre panels are oval, two of them being used as skylights. The detail is somewhat artificial and would be condemned by purists, but the verdict upon the work as a whole is "justified by success." It is not necessary here to consider whether Gothic fan-vaulting may be reproduced in ceilings of wood and plaster; it is better to accept the undoubted fact that the interior is one of the most beautiful in the City; it is finely proportioned, and there is an air of width and spaciousness about it when viewed from the west door which is very impressive. As usual in the churches of this period there is a wide and stately ante-chapel. The details of the seating, the fine organ and general sense of rich ornament surprise the visitor who sees it for the first time. The exterior is dignified; the great tower, in four storeys, 135ft. high to the finials, probably dates from 1632, and is itself an example of a Gothic survival, for at that date Palladian had practically superseded mediæval forms. It is much to be hoped that this fine church may not be sacrificed like so many of its neighbours (in several instances without any just reason), and its site covered with a block of offices and business premises.



DOORPIECE, WEST CAMPBELL STREET, GLASGOW. W. G. ROWAN, I.A., ARCHITECT.

SOME RECENT GLASGOW TEA-ROOMS.

By J. JEFFREY WADDELL.

A RECENT writer[*] says, "It is not the accent of the people, nor the painted houses, nor yet the absence of Highland policemen, that makes the Glasgow man in London feel that he is in a foreign town and far from home. It is a simpler matter. It is the lack of tea shops." Glasgow, in truth, is a very Tokio for tea-rooms. Nowhere can one have so much for so little, and nowhere are such places more popular or frequented.

And these tea-rooms are, as a rule, as interesting from an artistic and architectural point of view as they are useful. In most cases they are ingenious adaptations of old buildings or parts of buildings to modern requirements, so that many cellars which were formerly used for storing lumber are now well-ventilated smoking-rooms, brilliant with electric light and as comfortable as most homes. One or two occupy specially-constructed buildings, such as that erected for Miss Cranston by Mr. George Washington Browne, but as a rule they are of the former class, adaptations to modern requirements.

The tea-room in Glasgow is associated with the New Art movement. Of course, the element of cost enters into the construction and adaptation of these rooms; very few architects get an entirely free hand, and one hears many complaints of what the architect is expected to do for half what should really be the cost. But this in moderation is a valuable training for an architect. He who has schooled himself with cheap material can make good use of his opportunity when it comes. And while it is not pleasant to see a man capable of better things using inferior material, it is still worse to see—what is all too common—the most costly material wasted by injudicious application.

One of the most notable of these recent reconstructions in Glasgow was that done for Mrs. Schiller, West Campbell Street. These premises, originally the basement of a three-storey dwelling-house, have for some years past been used as tea-rooms, but recently they have been enlarged and greatly improved by Mr. W. G. Rowan.

A new door-piece has been erected which gives due importance to the entrance. It is of wood, painted ivory-white and enriched with stencils of the thistle and the rose, a lamp in broad leaded work and a hammered-metal door-plate. The simple lines and effective rustication of this door-piece add greatly to the appearance of this otherwise plain ashlar basement. Although Mr. Rowan alludes to work of this type as "billposter architecture" (he is known chiefly as a church architect), it has more legitimate uses than even the most artistic *affichier* can claim for his own art.

Mr. Rowan's interiors are treated simply. Square tapering wooden posts conceal the spidery cast-iron columns within, and give an architectural dignity to the rooms. The fireplaces are tiled and have simple polished-iron grates. The sideboard in the general dining-room is very effective, yet simple in its general lines.

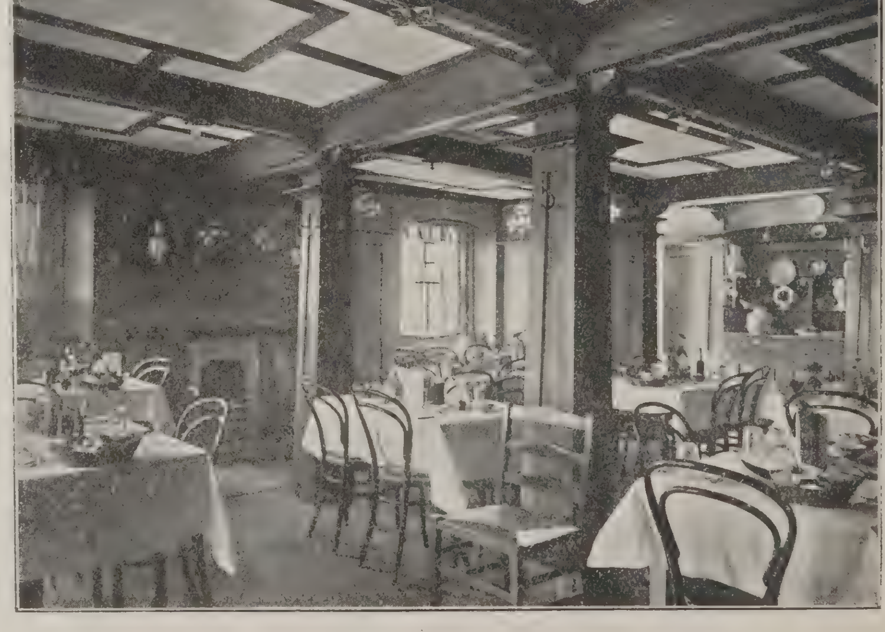
The smoking-room is a successful piece of work, restrained and refined in feeling. Great effect is gained by the use of a tapestry frieze which harmonizes very well with the rest of the design. The ladies' room has the same general character as the general luncheon-room, though with its own individuality in detail.

The premises occupied by the Old Oak Tea-Rooms have the advantage of being new and not reconstructed premises. These rooms form the street floor of one of Glasgow's most modern street fronts, a steel construction by Messrs. James Salmon & Son.[*] The name of this tea-room is justified from the fact that the rooms are furnished with upwards of seventy old oak chairs, settles and cabinets, many of which are very good specimens of old workmanship. The general luncheon-room extends to the full depth of the building and is lit from the front by a large oriel and from a well at the back. The illustration on p. 132 shows a general view of the room looking towards the back of the building. The detail of the capitals is modern, but Byzantine in feeling. The stencilled decoration is very delicate in colouring. On p. 130 one of the ingle-nooks, with its old-fashioned fittings, is shown.

The Regent Tea-Rooms are also situated in a fine new building, the architects of which were Messrs. Burnet, Boston & Carruthers. They occupy the major portion of the first floor.

The general luncheon-room is a large and spacious L-shaped apartment having two fireplaces (one of which is reproduced on the opposite page): they are pleasing in design and are enriched with decorative paintings. The fittings throughout are of oak.

The tea-rooms of Miss Cranston in Buchanan Street (illustrated in the centre plates), though not what might strictly be termed recent, are worth more than a passing notice. As already mentioned, they were specially designed by George Washington Browne, A.R.S.A. The building is four storeys high, the front being of red and white sandstone. On the ground or street floor are the ladies'-room and general tea-room, the first floor being occupied by two other tea-rooms. On the second floor are the luncheon- and dining-rooms. The top floor is occupied by the billiard- and smoking-rooms. The rooms to the front are lighted from the street, those to the back from a central roof-light and well. A passenger elevator, as well as a staircase, connects all the floors. The building is very handsomely fitted, but two styles are observable: that of the architect of the building, and that of Mr. Charles R. Mac-



LUNCHEON-ROOM, WEST CAMPBELL STREET. GLASGOW.

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[*] Mr. J. H. Muir in "Glasgow in 1901."

[*] Illustrated in THE BUILDERS' JOURNAL for December 31st, 1902.

FIREPLACE, REGENT TEA-ROOMS, GLASGOW.

intosh, who, together with Mr. George Walton, is responsible for the decoration and furnishing. The mural decoration is very original and striking.

Miss Cranston's tea-rooms in Ingram Street are adaptations of old premises to this purpose. For some years a portion of these rooms has been used by Miss Cranston, but quite recently a new ladies'-room, billiard-room and general tea-room have been added by Mr. Macintosh. In these tea-rooms he had an opportunity which has been admirably utilized. The ladies' room is finished in ivory white, and has an immense hobbed fireplace of sheet-iron decorated with opalescent glass. Two panels in coloured plaster occupy the frieze on opposite sides of the room—the one by Mr. Macintosh, the other by his wife. This room may be seen to best advantage from the gallery which runs along the side and end. The billiard-room is in the basement. Here the same New School treatment has been employed with great success. Everything is direct. The timbers of the ceiling are exposed, and the settles along the wall are simply rush-bottomed; yet the effect is distinctly artistic.

The largest tea-room reconstruction of recent years is that for Miss Cranston in Argyle Street, Glasgow. The front, which was formerly one of the most commonplace, had all its mouldings hewn off and was then rough-cast from the eaves to the signboard. The gables and dormers were fancifully treated, and a turret—red-tiled, like the roof—was erected. There are two entrances, the one shop-like, which serves for the ground floor, and the other a *pend close* which leads to a turret stair at the back of the premises. An inside stair is also provided. The ground floor is occupied by the tea-rooms, the first and second floors by luncheon- and tea-rooms, and the top floors by billiard-, smoking- and reading-rooms. The interior is fitted and furnished in the New School style which Miss Cranston has adopted in all her tea-rooms, in some cases with delightful results. The shop entrance with its flat oriel and simple wrought-iron and repoussé copper fittings is very pleasing in its effect, as are also some of the fireplaces and ingles.

The doorway to the newel stair, and the billiard-room, are both examples of good design. The building generally shows what can be done in reconstructing, from the most commonplace of buildings, rooms to suit the most modern requirements and the most artistic tastes. The architects of the building were Messrs. H. & D. Barclay.

SOMERSETSHIRE CHURCHES.

SOME SPECIAL AND DISTINCTIVE FEATURES.

By **HENRY CAYLEY, A.R.I.B.A.**

I AM going to deal mainly with three special features of the churches of the West of England—(1) a particular type of Early English work which is found in Somersetshire and neighbouring counties, (2) the famous Perpendicular western towers of Somersetshire churches, and (3) the details of woodwork in the rood screens of that district.

Of the special kind of Early English work we find examples at Glastonbury and Wells; though its peculiarities are not confined to those two places, but exist elsewhere in the West of England and South Wales, especially at Whitchurch in Somersetshire, Slimbridge in Gloucestershire, and Cheriton in the Gower peninsula in Glamorganshire. The special character of the work is a kind of Early English intermediate between ordinary Early English and French First Pointed. It retains everywhere the abacus square or octagonal on plan, as French work does; but the arch mouldings and the foliage on the capitals, while they have characteristic peculiarities of their own, are quite English and not at all foreign. In this they do not resemble the well-known capitals of the choir arcade at Canterbury attributed to William of Sens and William the Englishman, which, though not without some variations in an English direction, are to all intents and purposes French in character, and are either of the Byzantine character found in Sens Cathedral or of the type found in Notre Dame, Paris. These capitals always have one large leaf under the principal angle and a smaller leaf at the middle of the side, and the arrangement of the leaves and stalks is almost as regular as in a Corinthian capital. At Wells the foliage is arranged much more freely and more in the manner of ordinary Early English work. I cannot agree with a writer who maintains that this square abacus work at Wells suggests Canterbury influence. I think the character of the work at the two places is quite different.

St. Mary's Chapel at Glastonbury (an example of purely Transitional work) was originally detached from the church, standing to the west of it (the date of the dedication is said to be 1186). The other parts of the church are later: the considerable remains at the crossing are later Transitional, and the galilee was built in Early English times to connect St. Mary's Chapel with the west end of the nave. The chapel has some peculiar forms of zigzag which are seen further developed in the north porch of Wells. The piers at the crossing of Glastonbury and the galilee are pure Early English, but retain in one or two places the square abacus used much more extensively at Wells.

The works which I shall especially consider at Wells include the main portion of the building, *i.e.*, the nave, transepts and the three western bays of the choir. The date of these portions has been the subject of a good deal of controversy, but as far as I can judge all the visible architectural *features* must belong to the period of Bishop Jocelin (1206–1242). I cannot follow Canon Church, the latest writer on the subject, especially in view of the date of the work in the neighbouring church of Glastonbury, in referring any of the details to Bishop Robert (1136–1166) or Bishop Reginald (1174–1191), though very likely some of the plain masonry belongs to a date earlier than Jocelin.

The west front, though also almost certainly of Bishop Jocelin's time, does not

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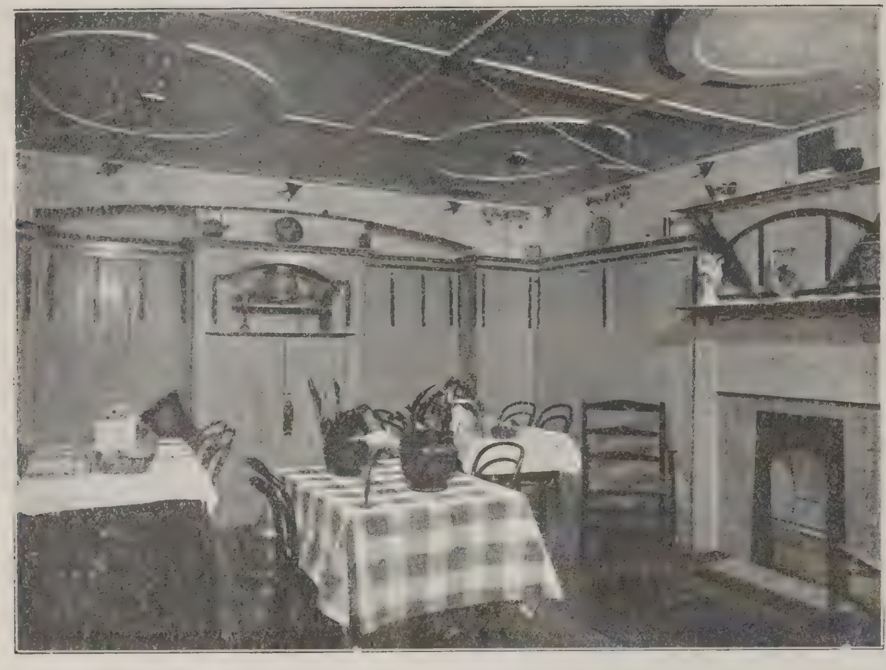
* A paper read before the Northern Architectural Association on January 14th, 1903.



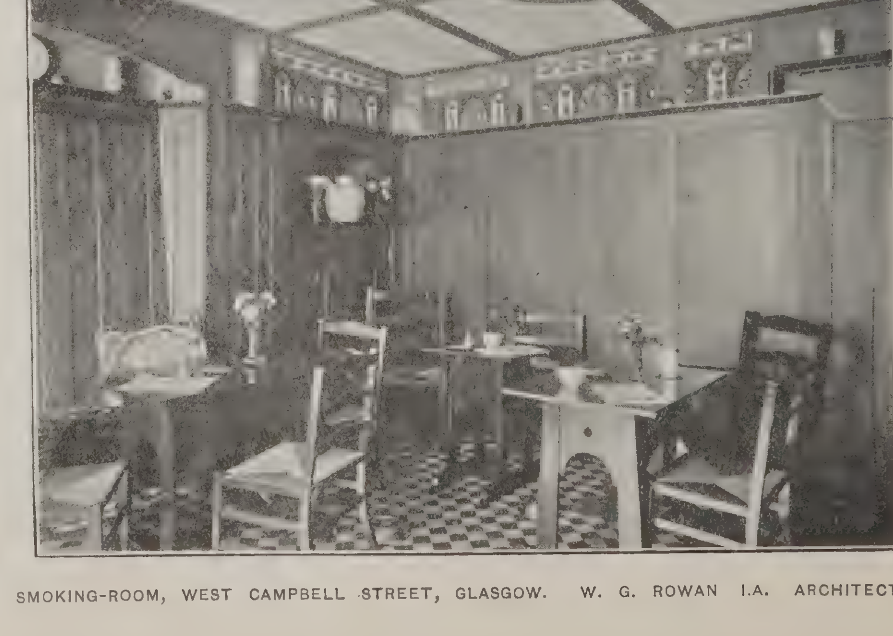
LADIES' ROOM, WEST CAMPBELL STREET, GLASGOW.

exhibit the peculiar character of the nave and the other parts I have mentioned; it is best known for the magnificent sculpture it displays; as an architectural composition it has been justly criticised as not representing the church behind it, and condemned for the insignificance of its doorways. Its details are not to be distinguished from the Early English details of Salisbury or Lincoln; there is an abundance of marble shafts; the round abacus is used throughout. In the nave we observe a lingering Romanesque character in the plan of the piers and in the absence of detached shafts, though I think you will agree that the foliage and mouldings are developed Early English.

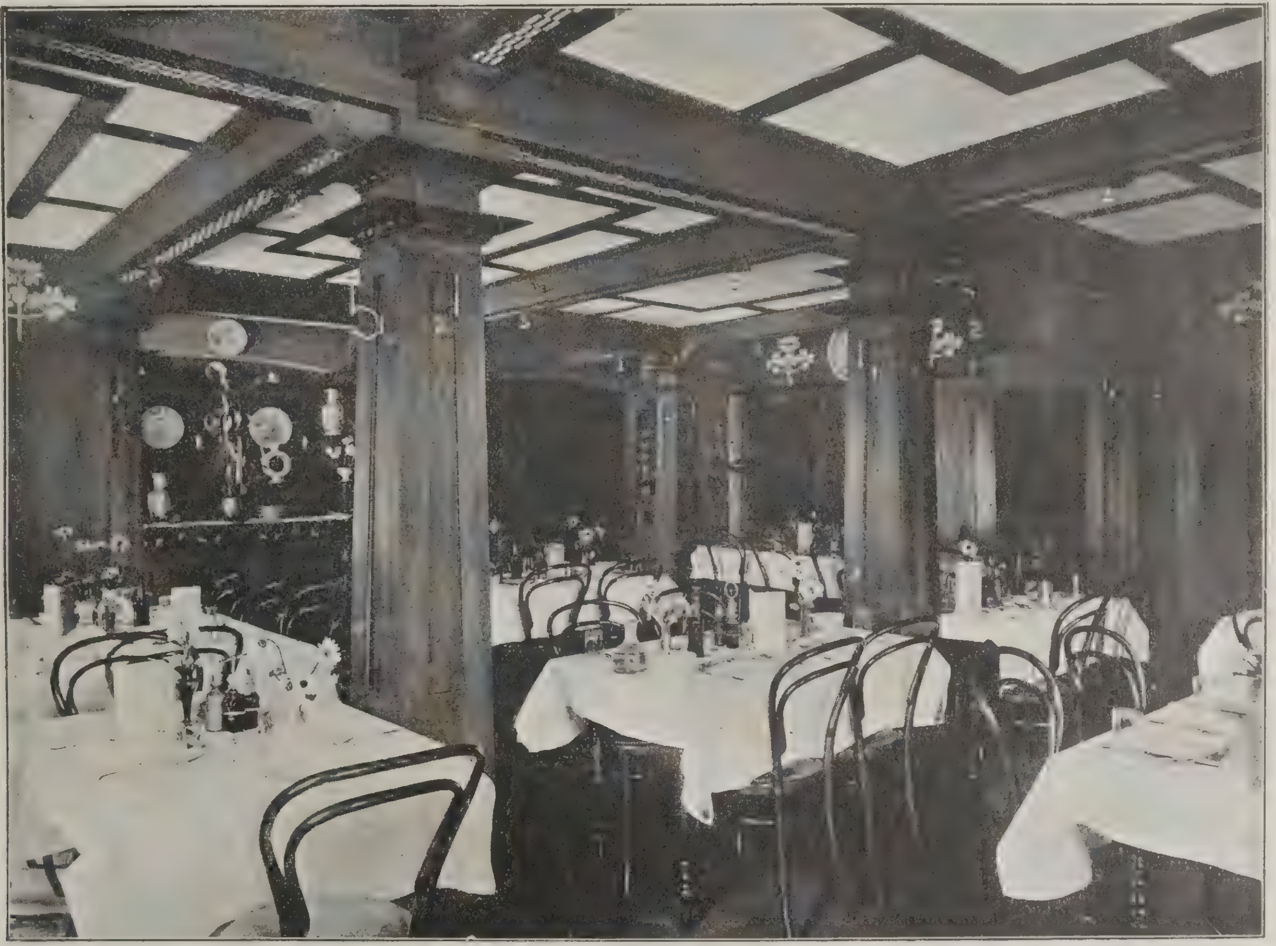
I have made a special study of the north porch (see the BUILDERS' JOURNAL for March 25th, 1903). This agrees with the nave in everything except that there is an abundant use of detached shafts (of Doulting stone, however, like the rest of the work, not of marble). The work is very elaborate, and the deeply-recessed second tier of arcading and the deep hollows of the mouldings produce a striking effect. I would call attention to the very ornate forms the zigzag has put on in the elaborate outer door; the capitals on the left-hand side of the door are said to represent the martyrdom of St. Edmund. And you will see here the special features of the work—the square and octagonal abaci and the stiff-stalked but irregular foliage of the caps. I need hardly remark that the pierced parapet, which runs round both aisle and clearstory walls, is a Decorated addition, and that the pier in the centre of the inner doorway is a Perpendicular insertion probably contemporaneous with the tracery inserted in the Early English windows.

The Perpendicular church towers of Somerset are our next subject. One of my principal sources of information has been Freeman's paper on the Perpendicular of Somerset, published in the 1851–2 Proceedings of the Somerset Archæological and Natural History Society. At the beginning of it he finds himself obliged to defend the towers of Somerset against some criticisms of Mr. Ruskin. Both the quotations from Mr. Ruskin and Freeman's answer are so amusing that I think them worth giving, though I suppose, fifty years later, those who read Ruskin enjoy his writings without treating him as an inspired and infallible guide. Mr. Ruskin inveighs against pinnacles and buttresses; pinnacles are in the following passage found to be offenders against the "Lamp of Beauty." "I believe," he says, "that all that has been written and taught about proportion put together is not to the architect worth the single rule, well enforced: 'Have one large thing and several smaller things, or one principal thing and several inferior things, and bind them well together.' Sometimes there may be a regular gradation as between the heights of storeys in good designs for houses; sometimes a monarch with a lowly train, as in the spire with its pinnacles. The varieties of arrangement are infinite, but the law is universal—have one thing above the rest, either by size or office or interest. Do not put the pinnacles without the spire. What a host of ugly church towers have we in England with pinnacles at the corners and none in the middle! How many buildings, like King's College Chapel at Cambridge, looking like tables upside down with their four legs in the air! What, it will be said, have not beasts four legs? Yes, but legs of different shapes, and with a head between them. So they have a pair of ears and perhaps a pair of horns—but not at both ends. Knock down a couple of pinnacles at either end in King's College Chapel, and you will have a kind of proportion instantly." Mr. Freeman calls this passage a good sample of Mr. Ruskin's diction and logic; and goes on to say: "The real question is, what have either the monarch or the table, to say nothing of the horses, goats, camels or hippopotami, which come after them, to do with St. Cuthbert's tower at Wells and King's College Chapel? Herein lies the great force of Mr. Ruskin's style of logic. He puts two things together by an arbitrary juxtaposition and then expects you, first of all, to accept the juxtaposition as an analogy, and finally to accept the analogy as an argument. What has a monarch and his lowly train to do with it? Why may I not in the nineteenth century erect, if I think good, a thoroughly republican steeple? Why may I not, if I choose, like some of my friends, to symbolize ecclesiastical facts, terminate my tower with the four Doctors of the Church, or even with the Twelve Apostles . . . . Again, he tells us, 'What, it will be said, have not beasts four legs?' By whom will it be said? Could the idea enter into any man's head but his own, that the legs of beasts prove anything, either way, as to the beauty of King's College Chapel. I am fully aware that beasts have four legs, just as other members of the animal kingdom have two, six, eight or a hundred; but I am too blind to see how any architectural principle can be deduced from this most indisputable fact. And as for the beasts 'with legs of different shapes and with a head between them,' I much doubt whether the deserts of Africa or the sculptures of Nimroud exhibit anything half so marvellous. I must appeal to the Natural History section to inform me whether any such are to be found in Nature."

Another piece of Mr. Ruskin's declamation refers to buttresses. He begins, "There must be no light-headedness in yonder noble tower; impregnable foundations, wrathful crest, with the vizor down, and the dark vigilance seen through the clefts of it; not the filigree crown or embroidered cap. No towers are so grand as the square-browed ones with massy cornices and rent battlements . . . But in all of them this I believe to be a point of chief necessity—that they



SMOKING-ROOM, WEST CAMPBELL STREET, GLASGOW. W. G. ROWAN I.A. ARCHITECT.



LUNCHEON-ROOM, WEST CAMPBELL STREET, GLASGOW. W. G. ROWAN, I.A., ARCHITECT.

shall seem to stand and verily shall stand in their own strength, not by help of buttresses nor artful balancings on this side or that. Your noble tower must need no help, must be sustained by no crutches, must give place to no suspicion of decrepitude. Its offices may be to withstand war, look forth for tidings, or to point to heaven, but it must have in its own walls strength to do this; it is to be in itself a bulwark, not to be sustained by other bulwarks; to rise and look forth 'the tower of Lebanon that looketh towards Damascus' like a stern sentinel, not like a child held up in its nurse's arms. A tower may indeed have a kind of buttress, a projection or a subordinate tower at each end of its angles: but these are to its main body like the satellites to a shaft, joined with its strength and associated with its uprightness, part of the tower itself: exactly in the proportion in which they lose their massive unity with its body, and assume the form of true buttress walls, set on at its angles, the tower loses its dignity."

"Now," asks Mr. Freeman, "what in the name of common-sense and common English does all this mean? If Mr. Ruskin thinks Magdalen College tower, Oxford, better than Wrington in Somerset or Titchmarsh in Northamptonshire, let him; it is a fair question of taste, on which we may differ quite comfortably; but why all this rant and dogmatism? What is 'light-headedness' in a tower? What is 'wrathful crest'? The glossary fails to inform me what is meant by 'square-browed towers' and 'rent battlements,' unless, indeed, a tower cannot put in a claim to 'nobility' till its parapet has been damaged by a thunderstorm. Finally, *why* is all this? Why cannot our buttressed tower do all these fine things? Why cannot Taunton tower 'rise and look forth,' &c., &c.; though as I do not know the form of 'the tower of Lebanon,' which I believe the royal lover likens to the nose of his bride, I cannot profess to say which of our Somersetshire types departs furthest from that ideal. To come to the main issue, I can, of course, only dogmatize back again; if I say 'there should be no top-heaviness in your noble tower,' I feel quite sure of being right; if I say it should have its vizor up, though I do not know what that means, I think probability is on my side, inasmuch as I am asserting the contrary to Mr. Ruskin; and I lastly solemnly affirm that what Mr. Ruskin says about 'crutches' and 'bulwarks supported by other bulwarks' is simply a specimen of his false analogies."

Whether you agree with Mr. Ruskin or not, I expect you will admire some of the towers I am now going to deal with, even if they are buttressed and have four equal pinnacles. The tower of Shepton Mallet Church illustrates most of the points I shall mention. The unfinished spire on this tower is a curious feature, which, of course, is not common, though there are several in the West of England and very few elsewhere; while the district is one where finished spires are very rare in proportion to the number of mediæval churches. I will first ask you to observe the treatment of the angle, considering it from the pinnacle downwards. The pinnacle is often placed diagonally, as here, stopping the parapet and running down so as to give a starting-point for the buttresses; we generally have two buttresses placed each a little away from the angle so that it can be seen between them; the use of the diagonal buttress is very uncommon. Pinnacles are often used at this uppermost set-off of the buttresses, and in some of the other towers are small pinnacles grouped around a principal one and pinnacles at all the set-offs of buttresses. The single pinnacle at the corner will serve to distinguish our type of tower from the Greyfriars tower at Richmond, Yorkshire, which has often been said to resemble the Somersetshire towers, and which has two pinnacles at each corner, each belonging to its own buttress; the same peculiarity apparently existed in the late tower at Fountains Abbey when it was complete.

Turning to the side elevation of the tower, we begin at the top with a pierced parapet, more often battlemented than having the horizontal line of this one: the wall face below is ornamented with sunk panelling in the form of window tracery and buttresses of slight projection, kept subordinate to the panelling, *not* with panelling of other than window-tracery form, as in the tower of Cirencester, Gloucestershire; *not* as in the central tower of Gloucester Cathedral and other towers taking their *motif* from that, with the small buttresses and decorative canopies and pinnacles projecting so far as to give them something of an appearance of ironwork nailed on to a solid stone tower; while the depth of the sunk panelling is sufficient to give considerable light and shade, and in that respect differs from Norfolk and Suffolk towers, which, fine as they are, have a flatness due to the method of construction itself, a consequence of the flint that is the local material there.

It is usual, though Shepton Mallet does not illustrate this point, to have a pinnacle subordinate to the angle pinnacles centrally between them and to continue it down as a buttress, so as to divide the belfry storey vertically into two at least.

The Somerset towers may be divided into

INGLE, OLD OAK TEA-ROOMS, ST. VINCENT STREET, GLASGOW.

three principal classes. St. Mary's, Taunton, belongs to a class where the tower is divided horizontally into several divisions and the belfry stage is less than a third of the whole height of the tower. It is true the divisions are not as prominent as in such a tower as Titchmarsh in Northamptonshire, the string-courses being stopped by the buttresses instead of running round them. There is generally a projection at one angle for the staircase, but prominence is not given to it, as that angle, like the others, has two buttresses, and the staircase finishes either just below or some way below the parapet level, or, at any rate, so that the pinnacle at that corner resembles the others. Of this class are Bishop's Lydeard, Chewton Mendip and North Petherton.

The second class is not very different, but more prominence is given to the staircase excrescence; it has no buttresses on its faces, as at Dundry; or it is continued up to form a turret, overcrowing the other pinnacles, as at St. James's, Taunton. Both these features are present in other churches, and the class is specially characteristic of Bristol and its neighbourhood. St. Stephen's, Bristol, is scarcely a characteristic Somersetshire tower, owing to the absence of real buttresses, but of this class are the churches of St. Werburgh, Bristol, Banwell, Westerleigh and Brislington.

The third class is perhaps the finest. Here we have quite half the height of the tower given to a very lofty belfry storey, with its windows suitably transomed but not otherwise divided; the staircase turret is altogether discarded, and for the effect, if you do not admire the towers of St. Cuthbert's, Wells, and still more, of Wrington, it is because the photographs do not make the towers look as beautiful as the towers themselves look.

I have two examples to mention which cannot be classed in these groups. Yatton has a central tower (all those we have hitherto dealt with are western towers) with an unfinished spire like Shepton Mallet; and Backwell has a great many peculiarities, and some features we can hardly admire.

The rood screens of Somersetshire exhibit a treatment of the tracery and foliage wholly unlike the treatment of the same things in East Anglia and Lincolnshire.

ORDAINED SURVEYORS.

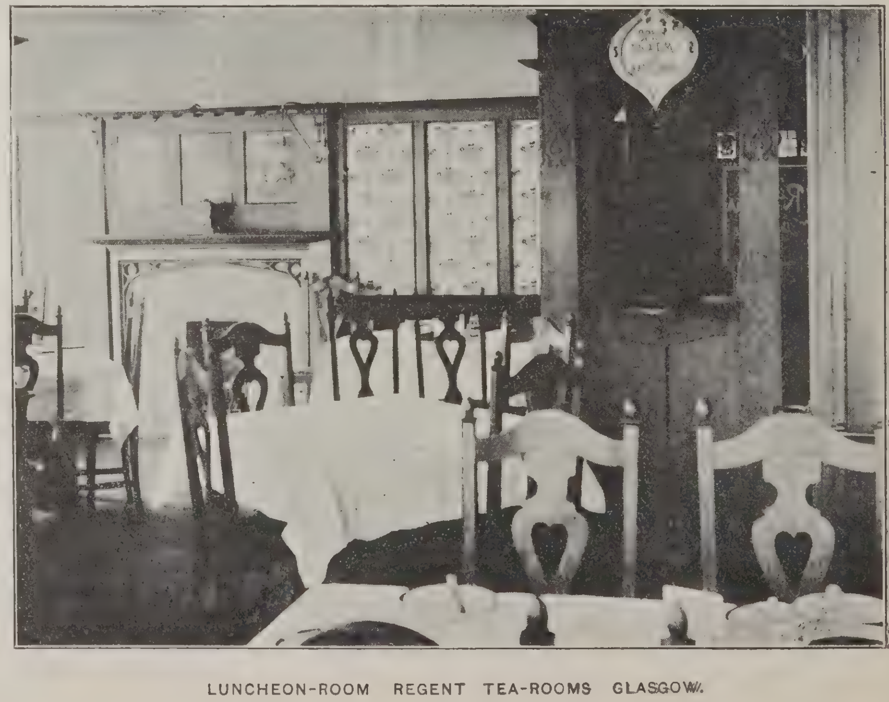
EIGHT candidates have come forward for the forthcoming preliminary examination of the Society of Ordained Surveyors to be held this month, and two for re-examination; nine for the forthcoming final examination, and one candidate for re-examination (all from Edinburgh). The Examining Board has resolved that in future the work done in the examinations need not necessarily be done according to Edinburgh methods, but that the examination should be a test of the candidates' general knowledge of the principles and practice of surveying, and of their capability to apply if necessary the methods adopted in Edinburgh or elsewhere. The Board has further resolved that the schedules and notes lodged by candidates in the final examination must be entirely their own work, and not prepared for and signed by someone else. The accounts of the past session show a balance in hand of £32 9s. 9d. The hon. secretary of the Society is Mr. Forest H. Lightbody, 56, Queen Street, Edinburgh.

SEWAGE-DISPOSAL.

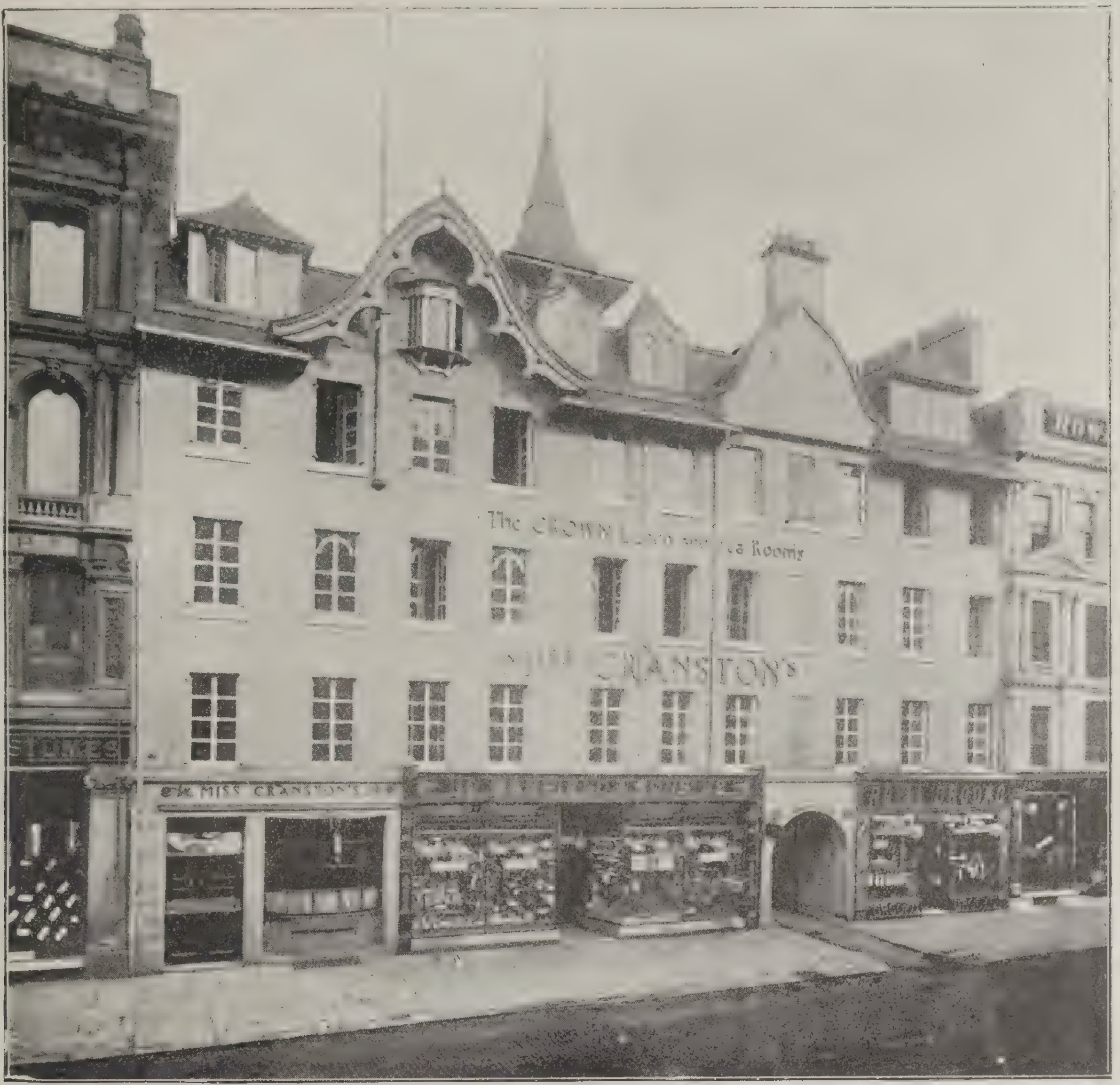
Commissioners' Third Report.

THE third report of the Commissioners appointed in 1898 to enquire as to methods of treating and disposing of sewage was issued recently, the present report dealing specially with two points—(1) the relations between local authorities and manufacturers in regard to the disposal of manufacturing effluents; and (2) the need of setting up a central authority. In regard to the first point the Commissioners are of opinion that the law should be altered so as to make it the duty of the local authority to provide such sewers as are necessary to carry trade effluents as well as domestic sewage, and that the manufacturer should be given the right, subject to the observance of certain safeguards, to discharge trade effluents into the sewers of the local authority if he wishes to do so. They do not think it possible to provide by direct enactment what these safeguards should be. In each district it would probably be desirable that the local authority should frame regulations which should be subject to confirmation by a central authority.

Having referred to the necessity of providing machinery for the settlement of differences between local authorities and manufacturers, the Commissioners find that the chief questions on which differences may arise are the following:—(1) The refusal of a local authority to allow a particular trade effluent to enter its sewers; (2) the refusal of a local authority to construct or enlarge sewers for the purpose of a particular manufactory; (3) the question of varying general regulations as to preliminary treatment by the manufacturer; (4) the amount of the special charge to be imposed on the manufacturer; and (5) the removal of sludge. The Commissioners took a considerable amount of evidence as to the means which should be adopted for settling these differences. The balance of opinion was found to be strongly in favour of the view that for the settlement it was necessary to constitute a Central Board possessing adequate technical knowledge, such as the Supreme Rivers Authority which the Commissioners recommended in their interim report.



LUNCHEON-ROOM REGENT TEA-ROOMS GLASGOW.



TEA-ROOMS, ARGYLE STREET, GLASGOW. RECONSTRUCTION BY H. AND D. BARCLAY ARCHITECTS.

SCOTCH CASTLES.

IN his fifth Rhind lecture at Edinburgh, Mr. Thomas Ross proceeded to point out that the third period of the architecture of Scotland began with the reign of James I. and ended with that of James V., comprising the whole fifteenth century and forty years of the sixteenth. What entitled that period to be regarded as a distinct epoch was that great castles and palaces again began to be built rivalling in size those of the first period. Linlithgow, Stirling, Edinburgh, Falkland, Doune, Tantallon, Dunfermline, Spynie, Balveny, Rosslyn, Edzell, St. Andrews and many others were all castles or palaces of great size, and were, some of them, built as one undertaking. Others, of which Hermitage and Crichton were examples, were greatly enlarged. These great buildings were more domestic in their arrangements than the first-period castles were. Although they were all strong houses, they were not planned on such entirely strategic lines. They were not, like them, divided into parts, each of which besiegers had to win successively at always increasing risk to themselves as the garrison got concentrated into narrower space. There was an increased appreciation of the refinements of life and manners, when it became impossible on both sides for the lord, the lady and their retainers to live in common in the great hall. That led to an increase of apartments and a division of the house, suitable to different degrees. Gunpowder, invented about that time, was first sent to Scotland in 1382, obviously for the munition of Roxburgh Castle, and ultimately that invention changed the whole art of war and fortification and had an undoubted effect on castle-building. Also about that time a remarkable group of Churchmen appeared in Scotland—founders of colleges, and encouragers of the new learning which was beginning to make itself felt—and as they were all great builders their influence must have been considerable in widening the scope of the conceptions of the amenities of life. But, perhaps, what gave the greatest impulse to the revival of domestic and castellated architecture was the magnificent patronage given by the Stuart kings at the Palaces of Linlithgow, Dunfermline, Stirling, Edinburgh Castle and Holyrood, Falkland and other places. Perhaps it was at Linlithgow Palace where the architecture of the period reached its highest level. As it then stood (and it was practically entire) it was begun, carried on and ended by the six Jameses, and by them only, so that it might be regarded as the grandest memorial which they possessed of the Stuart kings. One of the striking features of the great courtyard castles of that period was that the entrance was below the principal part of the building through into the courtyard, from which one reached the various stairs leading to the different parts. That would be observed at Tantallon, Doune, Balveny, St. Andrews, the restored centre of Dirleton, Linlithgow and other places. That passage was always well secured with drawbridge, stout doors and portcullis, worked from a room above, and was further secured against fire by being arched in stone. From the security of the courtyard the rooms could be safely lighted with large windows, and thus it often happened that these castles had a more cheerful air within than the outward appearance would lead one to expect. Along with these large courtyard castles and palaces, the old Norman keep plan still maintained its place, and in that period the largest of the kind was built at Borthwick. It was worthy of being compared with the Norman keeps in size and grandeur. Numerous examples of lesser size were built throughout the whole country. A series of them along the Firth of Clyde appeared to have been built, after a model plan, of about the same size and four storeys high. The arrangement of the hall and kitchen was carried out in each on the same lines. The kitchens consisted of one end of the hall partitioned off. They were perhaps 12ft. or 15ft. long by 4ft. or 5ft. wide, with an arched fireplace of the same size, round which the servants sat. These kitchens showed a considerable advance in domestic convenience over the earlier keeps, where most of the cooking must have taken place in the hall or in sheds outside. Confined and narrow as these keeps appeared now, there was often, doubtless, a considerable amount of domestic happiness with a sense of security experienced within their walls.

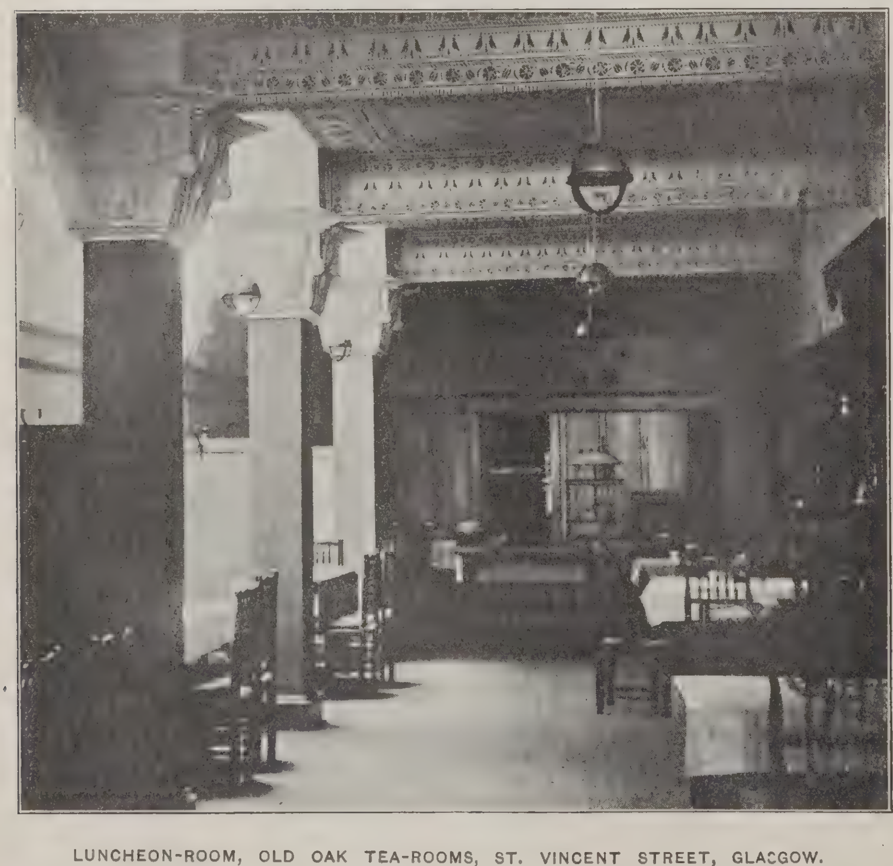
Bricks and Mortar.

Aphorism for the Week.

A Gothic cathedral is surely the most wonderful work which mortal man has yet achieved, so vast, so intricate, and so profoundly simple, so difficult to comprehend within one idea, and yet all so consonant that it ultimately draws the beholder and his universe into its harmony.—NATHANIEL HAWTHORNE.

Our Plates. THE two main buildings of the new premises in Union Street and Candover Street, W., consist of two flats on each floor, containing sitting-room, bedroom, kitchen, larder, coal-store and w.c. The corner building contains workshops in the basement, offices on the ground floor, with a separate entrance in Union Street, and flats over each with sitting-room, two bedrooms, kitchen, larder, bathroom, w.c. and coal store. The exterior is of red, grey, Luton and brown salt-glazed bricks, Portland stone, buff-coloured, snow-flaking and green-tinted cement, the trade panels being in green and brown mosaic. The roofs generally are covered with green slates, the flèches and turrets with copper. The whole of the joinery is to be finished white, except the oak frames to bays, which are to be stained. Messrs. Smith & Co., of Mount Street, are the general contractors, and the sanitary works are by Messrs. Thomas J, Boulting & Sons, of Union Street, Middlesex Hospital. The architects are Messrs. H. Fuller Clark and Percy A. Boulting, of 30, John Street, Bedford Row, London, W.C.

A Hereford Tower. THE tower of all Saints' Church, Hereford, has been stated to be in a dangerous state, but no catastrophe is imminent, though the tower needs repair. As far back as March, 1877, Sir Gilbert Scott reported that the tower had declined considerably from the perpendicular in a northern direction, owing to the failure of the foundation on that side. Proceeding, he said that "during the last century three great sloping buttresses were built on the north side, and a few iron ties were inserted which have proved of great support to the tower, very little movement having since taken place in the lower stages which are so strengthened. I would, however, recommend the insertion of some additional iron ties in places which show the need for them. I would also bond across the several fissures in the wall with strong landings and grout the interstices with cement so as to make the walls again compact. I would keep the great buttresses of the last century, but improve their appearance in accordance with the architecture of the tower, making the faces upright and introducing offsets and gablets. The parapet will have to be almost, if not entirely, new. The belfry windows should be opened where now walled up, properly restored, and fitted with oak louvres." Certain repairs were made to the tower at the time, but its complete restoration has not as yet been accomplished other portions of the church claiming prior attention. As is well known, the church has been restored in sections, on the recommendations contained in the report made by the late Sir Gilbert Scott in 1877, and the section now in hand—the restoration of the south aisle and chancel—is almost complete. Mr. Oldrid Scott, the late Sir Gilbert Scott's son, was lately requested to make an examination of the tower, and he says: "There can be no doubt that the full restoration of the tower is loudly called for by its condition. The outer surfaces are in a bad state, and it is due to this that small pieces of stone are frequently falling, but the structural defects are, I need not say, of a much more serious nature, for nothing beyond small fragments of the peeling surface of the stones are likely to fall, and these, though they may cause some alarm, could hardly do any real injury. I fear very little can be done to remedy this, as nearly every part of the tower is out of reach, except from a scaffolding. There can be no doubt that as soon as possible efforts should be made to put the whole tower in a really satisfactory condition." It is estimated that a complete restoration of the tower would mean an outlay of from £1,500 to £1,800.



LUNCHEON-ROOM, OLD OAK TEA-ROOMS, ST. VINCENT STREET, GLASGOW.

Bulgarian Houses. BULGARIAN houses are half subterranean. One descends by a steep incline, and the room or rooms are so far below the surface that there is only just space for apertures under the eave to supply light and air. During the "atrocity" agitation this style of building was gravely adduced as evidence of the terror under which the people lived; the poor wretches tried to conceal their dwellings as much as possible. The Bulgarian peasant is not renowned for intelligence, but he has more sense than this futile proceeding would imply. It is to keep his living-chamber warm in the terrible winter, so far as may be, with a minimum expenditure of fuel, that he sinks it partly in the ground. The upper "floor" is level with the earth in the summer. Armenians follow the same fashion, but as the cold is even more terrible there, horses and sheep and cattle must be lodged underground. The roof is flat, covered with a thick layer of turf, and when snow conceals the holes, glazed with oil-paper, which give light to the dwelling below, the inmates are not at all surprised to see a horse's leg crash through. That is a warning of the arrival of strangers, like a knock at the door.

Architectural Photography. WRITING in the "Daily Graphic," Mr. A. Horsley Hinton says:—In no class of subject is photography's superior power of delineation more self-evident than in the portrayal of the architectural, and one might say that it betrays a proportionate inferiority in imparting to the cathedral interior or other representation the sentiment of the subject. Mr. Walter Scutt, recently writing on this matter, asks "Is it that the excellence of modern photographic instruments, the marvellous wealth of detail given by the finest lenses of to-day, and the perfection of our printing processes run away with us, as it were, and we set mechanical perfection before all other qualities? Or is it that the mass of photographers are so supremely satisfied with their photographic productions, and so little acquainted with the great masterpieces of the other graphic arts? . . . There can be no general progress until photographers feel, as did the early water-colourists, that the mere delineation of detail is a bar to progress, and that a picture must be treated as a composition with a defined intention rather than an aggregate of detail?" Interior subjects have been rendered by photography with such exquisite perfection as regards accuracy of detail and suggestion of texture, and the value of such records as such is so great, that it may well be wished that sometimes at least the photograph might give also some of the feeling of solemnity, the mystery of dimly-lit spaces, the sentiment of uplifted column and wide-flung arch and dome, and this might be done if once the photographer fully realized that for this purpose the delineation of detail must be subservient to the rendering of light and shade—the descending shaft of light making dim all beyond it may not contribute to the exact portrayal of material objects, and twilight will borrow clearness of vision in exchange for the mystery it lends, and make a playground for the imagination where curious scrutiny is debarred. Those amateurs who have again and again given us such uncompromisingly perfect likenesses of cathedral interiors and similar subjects have probably never conceived the idea of treating the architectural interior in any other way than to make an inventory of every form and detail. They have lacked neither ability nor opportunity, but have never been prompted by the right motive for pictorial ends.

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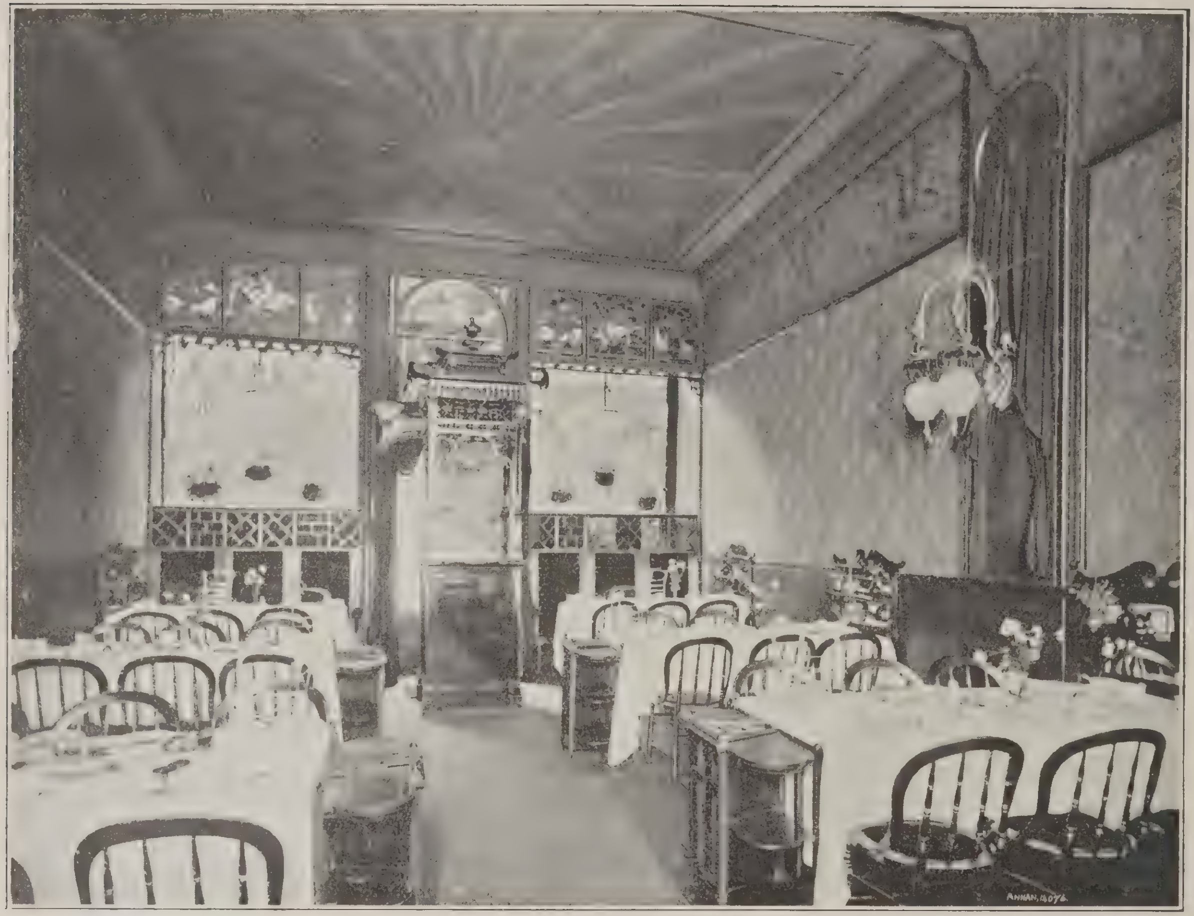
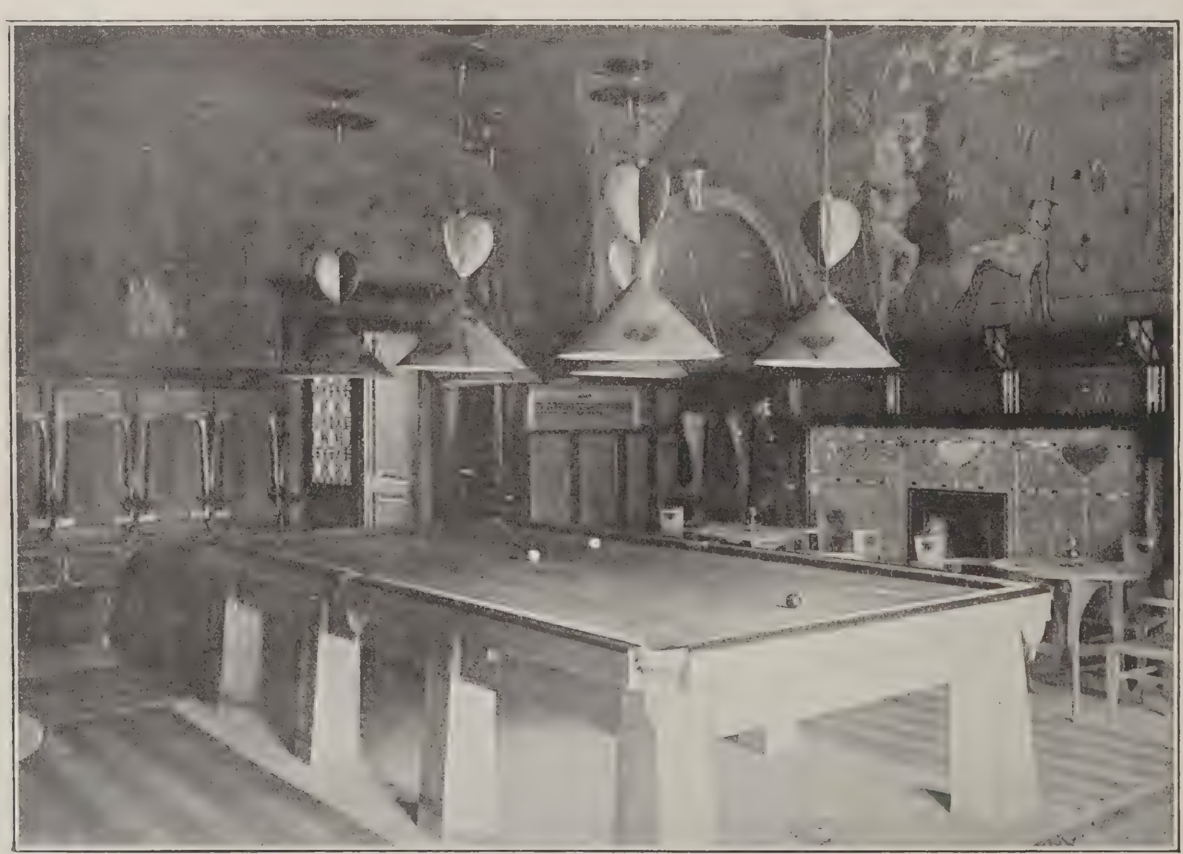


GENTLEMEN'S TEA-ROOM, NOS. 205-9, INGRAM STREET, GLASGOW.
KESSON WHYTE, ARCHITECT. ALEXANDER AND HOWELL DECORATORS.



BILLIARD-ROOM, NOS. 91 93, BUCHANAN STREET, GLASGOW.
DECORATION AND FURNISHING BY CHARLES R. MACINTOSH AND GEORGE WALTON.

(In illustration of the Article

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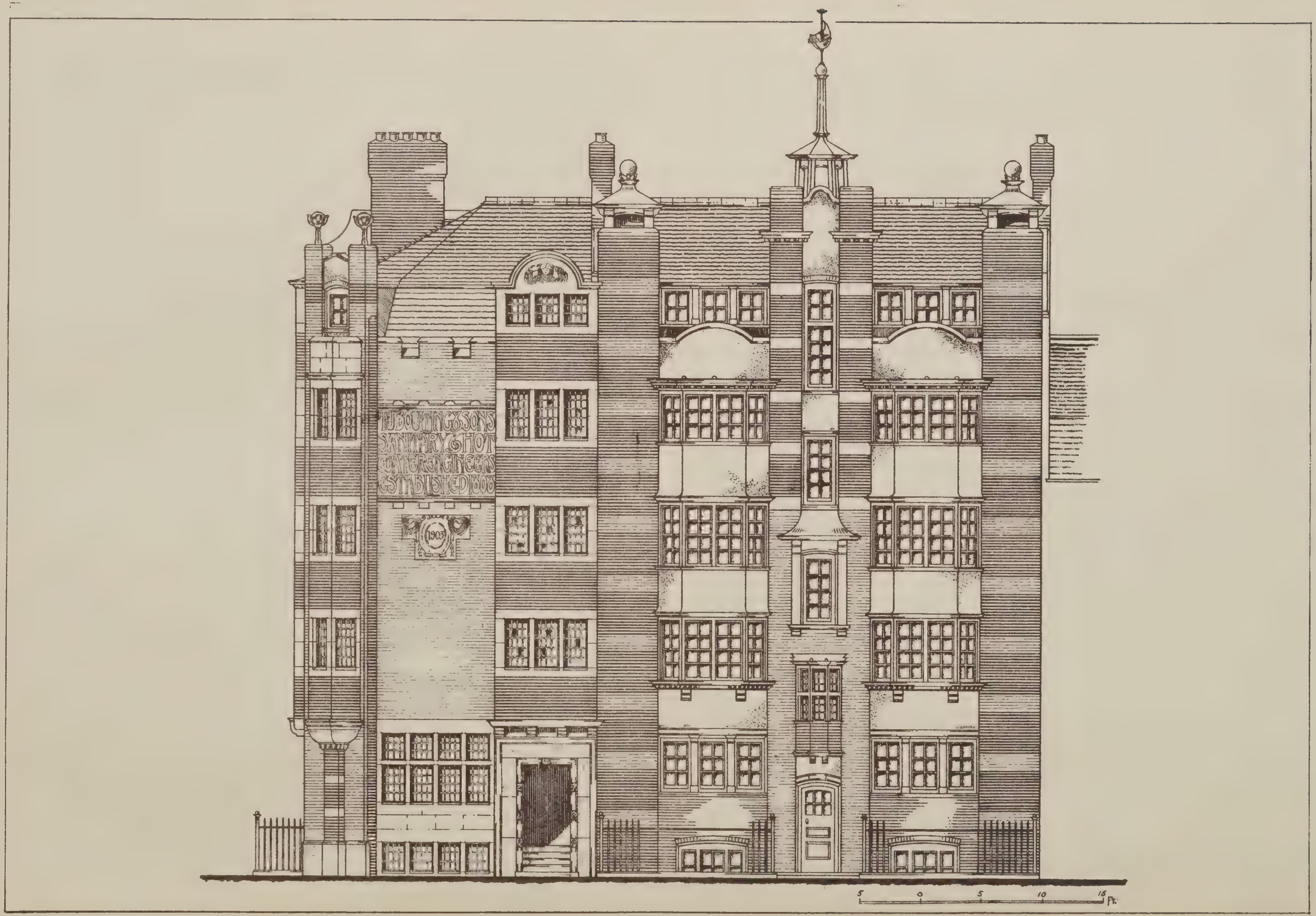
Supplement to
The Builders' Journal and Architectural Record,
Wednesday, *April* 15*th*, 1903.



NEW PREMISES, LONDON, W.: ELEVATION TO UNION STREET.

H. FULLER CLARK AND PERCY A. BOULTING, ARCHITECTS.

Supplement to
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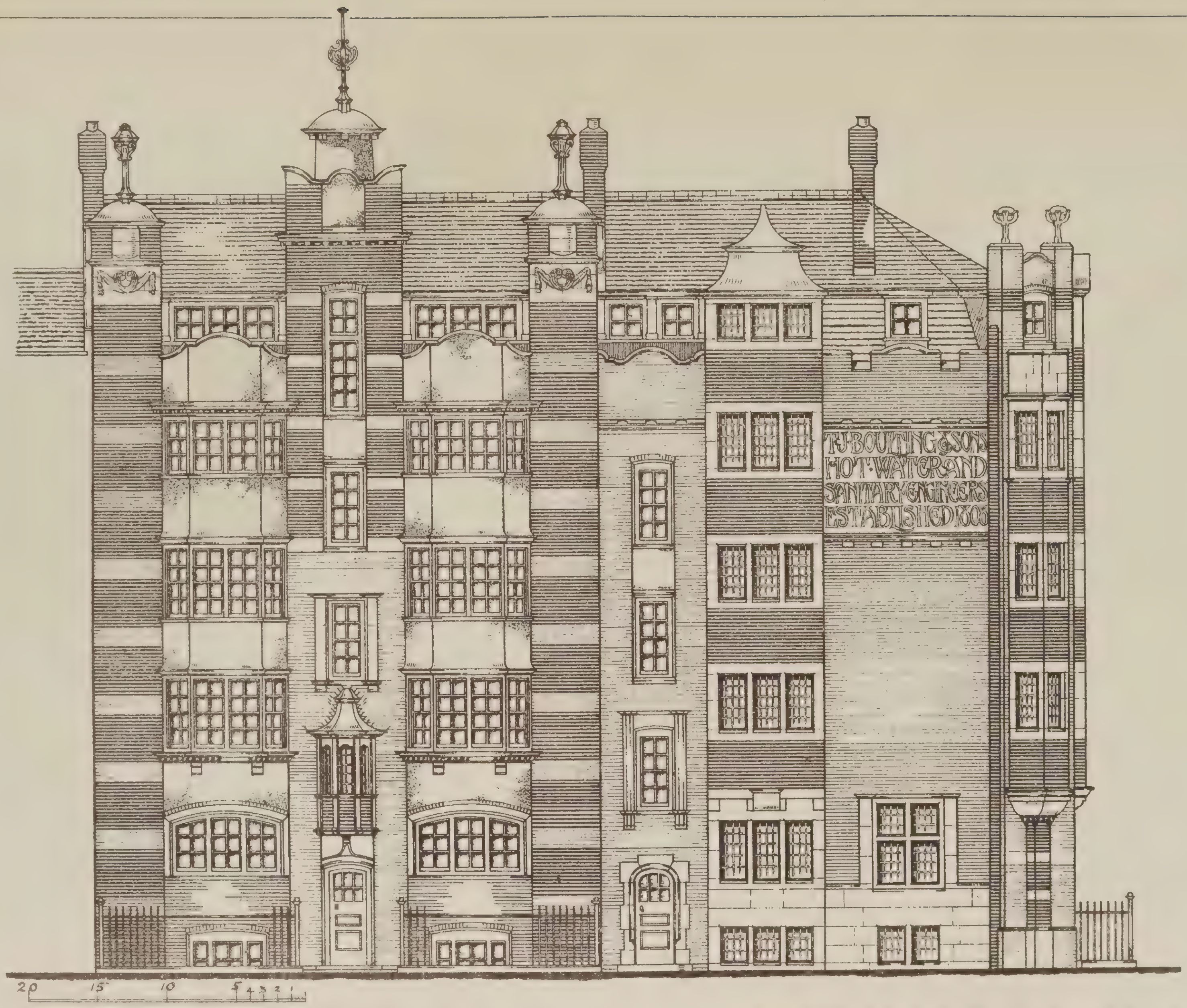

"PHOTO-LITHO." R. J. EVERETT & SONS 56 LUDGATE HILL, E.C.

NEW PREMISES, LONDON, W.: ELEVATION TO CANDOVER STREET.

H. FULLER CLARK AND PERCY A. BOULTING, ARCHITECTS.

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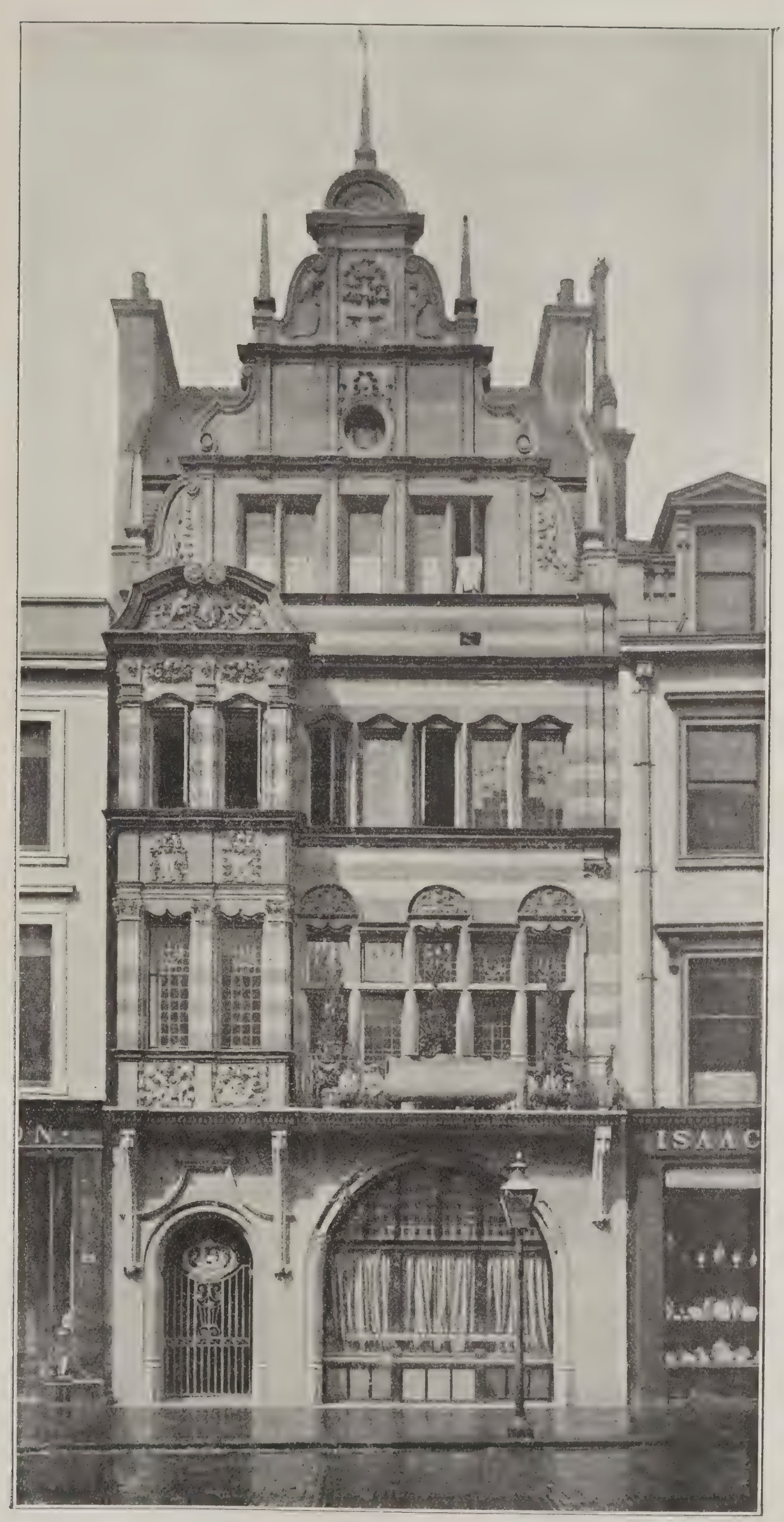

TEA-ROOMS, NOS. 91-93, BUCHANAN STREET, GLASGOW.
GEORGE WASHINGTON BROWNE, A.R.S.A., ARCHITECT.

nt Glasgow Tea-Rooms.")

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MODERN LONDON BUILDINGS.

(*Continued from* p. 109, *No.* 425.)

Having received numerous enquiries on the subject, we thought it useful to have a list compiled of the principal buildings erected in London during the last twenty-five years. In compiling this list the Editors have met with much difficulty. The pages of this and other technical journals have been consulted and put largely under contribution, and our thanks are tendered to our contemporaries for the large amount of information which was thus obtained. Still, inaccuracies and omissions must be inevitable in such an undertaking, and we should be much obliged to any of our readers who would kindly write to us with corrections and additions. As far as it is possible to do so the buildings are dealt with in districts, and, as will be seen, are gathered together under the respective years when they were erected. A list of public and semi-public buildings in the E.C. district was published in our issue for March 25th, and of domestic buildings, religious buildings, colleges and schools in the same district in the issue for April 1st.

E.C. DISTRICT: BUSINESS PREMISES.

BUILDING.	ARCHITECT.	APPROXIMATE COST.	REMARKS.
1875.		£	
Cassell & Co.'s Printing House, Ludgate Hill (site of Carrier's Inn).	Francis Chambers	—	Frontage 232ft.
Crown Court Buildings, Old Broad Street.	Edmeston & Son	—	Built of Box Ground Bath stone, with red Dumfries.
Delaterre's Premises, Poultry.	F Chancellor	—	Built of brick with Dumfries-stone dressings. There are lofty dormers in the roof. Mr. Kremer executed some historical bas-reliefs in terra-cotta.
Greenwood & Son, clockmakers' premises, Ray Street, Farringdon Street.	Rowland Plumbe	—	
London and County Bank, Lombard Street (large additional building, Nicholas Lane).	Mr. Parnell	—	
1876.			
David Evans's Premises, Wood and Milk Streets.	Herbert Ford	3,500	The facings are of Portland stone, carved by Mr. Seale.
Hampshire Banking Co.'s Premises, corner of Bishopsgate and Threadneedle Streets.	T. K. Green	40,000	
Office Premises, 89 and 90, Leadenhall Street.	Herbert Ford	3,500	The front is of Portland stone, the design being Gothic.
Samuel Brothers' Premises, Ludgate Hill.	Joseph & Pearson	—	The building is of seven storeys, each floor having an area of 4,000 sq. ft.
Sandon Brothers' Premises, 79, Mark Lane.	W. S. Witherington	40,000	
Shop Premises, 12 and 13, Poultry.	F. Chancellor	—	Built of red bricks and terra-cotta.
Warehouse for Mr. Lange, Camomile Street.	F. Chancellor	—	Built of red brick with red Dumfries-stone dressings.
1877.			
Ayres & Co.'s Premises, Aldersgate Street.	Lander & Bedells	—	
Fishmongers' Company's Offices, Billiter Street.	T. Chatfeild Clarke	—	
New Zealand Banking Co.'s Premises at the National Safe Deposit Co.'s Premises, Queen Victoria Street.	John Whichcord	—	Extensive alterations were made to fit up the building as a bank.
Office Premises, 8, Bucklersbury.	E. Woodthorpe	—	The building is 52ft. high and is faced with stone.
Premises for Mr. A. M. Kino, 42, Cornhill.	B. Tabberer.	—	Box Ground Bath stone is used for the elevation, the carving being by Mr. Seale.
Premises for Maw, Son & Sons, 7-11, Aldersgate Street.	H. B. Garling	—	The front is of Portland stone with terra-cotta finials.
Prudential Assurance Co.'s Buildings, Holborn (old portion).	Alfred Waterhouse	200 000	The buildings cover two-thirds of an acre ot ground. The Holborn frontage is 82ft. in length, the extreme depth being 360ft. The Brooke Street frontage is 190ft. long. The lower portion of the structure to the top of first floor is in massive red and grey polished granite. The central main entrance is supported by granite columns, and has an arch of the same material, the pediment surmounting the arch being of red brick and terra-cotta. The building is 80ft. high, and the materials used for the elevations are terra-cotta and red moulded brick, the general design being Gothic. The main foundation walls are 6ft. thick, and the floors are supported by iron columns.
Shops and Offices, corner of Little Moorfield and Short Street, Finsbury.	Joseph & Pearson	50,000	The frontage of the buildings is 186ft. long by 70ft. deep, and 60ft. high to the cornice. The centre of the elevation is surmounted by a clock tower 76ft. high. The area covered is 11,000ft. super., the building consisting of thirty shops, and each upper floor of ten suites of offices of four to five rooms each.
Royal Bank of Scotland, 123, Bishopsgate Street Within.	T. Chatfeild Clarke	—	The style adopted was Italian in the two Orders, Ionic and Corinthian. The building is surmounted by a handsome modillion and block cornice. The spandrels between the columns, filled with carving in low-relief, were executed by Mr. Anstey, as was also the other carving on the building. The materials are grey Aberdeen granite and Portland stone.
Tobacco Warehouse for W. D. & H. O. Wills, 53, Holborn Viaduct.	Robert Walker	—	
West India Dock Co.'s Dock House, Billiter Street.	A. Manning (engineer).	25,000	The style adopted is an adaptation of Venetian Gothic.
1878.			
Banking House for Mr. J. Mixer, corner of Newgate and King Edward Streets.	J. W. James	4,618	The elevation is of red brick and red Dumfries stone.
Fairbank's Showrooms, corner of St. Mary Axe and Camomile Street.	H. H. Collins	10,000	The front is of stone with red and grey granite, carved by Mr. Sansom.
Fourdrinier, Hunt & Co.'s Warehouse, Ludgate Square, Ludgate Hill.	Charles Bell	—	The building has six floors, and covers an area of 2,000ft. super. The elevation is in red and yellow brick.
Offices for Anderson, Anderson & Co., 5, Fenchurch Avenue.	J. J. Stevenson	—	
Premises for Mr E Burrell, Coleman and Gresham Streets	J. & W. Wimble	—	The style adopted for the elevation is Græco-Italian, and comprises an Order with red granite pilasters and rusticated piers to first floor. Above, Corsham Down stone with red Portland-stone dressings are employed. The carving is by Mr. Sansom.
St Mildred's House, Offices of the Gresham Life Assurance Co, Poultry.	J. J. Cole	40,000	
1879.			
Capital and Counties Bank, Ludgate Hill.	B. Tabberer	—	The building is 60ft. high. The upper part of the elevation is in Bath stone. The ground floor contains a banking hall 40ft. in depth.

E.C. DISTRICT: BUSINESS PREMISES—*cont.*

Building.	Architect.	Approximate Cost.	Remarks.
1879—*cont.*		£	
Leadenhall House, 99 to 103, Leadenhall Street.	J. L. Holmes	-	The frontage is 70ft. long, and the building is 180ft. deep, the style being Renaissance. Red granite is used in the elevation up to the top of the third floor, above which stone is used. The sculpture is by Signor Fucigna.
Moyley & Smith's Shops, Paternoster Row	Taylor & Locke	—	The frontage is 36ft. long and 56ft. high. The piers to the shops are of serpentine marble, the upper portion of the elevation being of Conflan and Portland stones.
Post-Office Savings Bank Buildings, Queen Victoria Street.	James Williams, H.M.O.W.		The building has a frontage of 146ft., and is 80ft. high and 100ft. deep. The elevation is of Portland stone, the back elevation being of brick and stone.
Rylands & Sons', Ltd., Warehouse, 50, 51, 52, Wood Street, Cheapside.	J. & J. Belcher	—	
Shop and warehouse of J. Thomas & Sons, corner of Brushfield Street and Bishopsgate Street Without	Charles Bell	—	The design of the building, which is 80ft. deep, is Gothic in character. The Bishopsgate frontage is of Portland stone with Shap granite pilasters and columns. The Brushfield Street frontage is of brickwork with Bath-stone dressings.
"Temple Gardens" Buildings, Temple.	E. M. Barry, R.A.	—	The elevation is of Portland stone, and the statues are by W. Calder Marshall, R.A.
"Times" Office, Queen Victoria Street	Mr. Deacon	—	
Warehouses and Shops (on site of Shakespeare House), Aldersgate Street.	George Vickery	—	The materials used in the elevations are red bricks with Portland- and Bath-stone dressings. The pilasters to the shops are of red Mull granite.
Warehouses for Drugs, 60, Bartholomew Close.	Aston Webb	—	
Warehouses (site of All Hallows Church), Watling Street and Bread Street.	Alexander Peebles	—	The buildings are in the Queen Anne style, and are of red brickwork with Portland-stone dressings and terra-cotta ornament. The Watling Street frontage is 80ft in length, and that to Bread Street 30ft. The adjoining warehouses and offices in Bread Street, designed by the same architect, are in Portland stone and Bath stone. and have a frontage of 45ft., the height being 50ft.
Warehouse for Alexander Pirie & Sons, 96, Farringdon Street.	George Vickery	—	The style adopted for the warehouse is classical in tendency. It is executed in red brick and Portland stone. It has a frontage of 54ft. and a height of 70ft.
1880.			
London and Lancashire Life Insurance Company's Buildings, Cornhill.	T. Chatfeild Clarke	20,000	The elevation is in Portland stone and polished granite, and is 55ft. in length by 70ft. in height. The design is in the Early French Renaissance style.
Offices, 18 & 19, Addle Street, Aldermanbury	E. H. Martineau	—	The materials used in the construction of the building were red bricks and red Mansfield stone. The cornices are of red moulded bricks and terra-cotta, and the window dressings of Portland stone.
Offices, 20, Bucklersbury, corner of Queen Victoria Street and Cornhill.	John Whichcord	300,000	The foundations are carried down to a depth of 40ft., which admits of the construction of a lower ground-floor, basement and sub-basement, the sub-basement being 30ft. below street-level. The frontage to Bucklersbury is 40ft. in length and 70ft high. The ground floor is faced with Portland stone, and the five floors above with red bricks, Portland-stone quoins. pilasters, &c.
Reliance Mutual Life Assurance Society, 70, 71 & 72, King William Street.	F. Chancellor	15,000	The exterior is of red granite and stone, in the Renaissance style. The principal office measures 37ft. by 28ft. and is 17ft. high.
Shop Premises, 106, Cheapside.	William Wimble	—	The front is of Portland and Bath stones, and is designed in the French Renaissance style. The carving is by Mr. Sansom.
1881.			
"Gresham Press" Buildings, Little Bridge Street.	Rowland Plumbe	—	The shops on the ground floor are carried up on Bath-stone pilasters. The upper storeys are in stock brickwork, with red-brick bands. The buildings are in the Queen Anne style.
Office Buildings in connection with the Wool Exchange, Basinghall Street.	John Gordon	—	The Basinghall Street frontage is in the Renaissance style, the elevation being 72ft. high by 60ft. wide. The ground floor is of Aberdeen granite with Bath stone over, profusely carved.
Standard Life Assurance Co's Offices, King William Street.	Boulnois & Warner	—	The frontage to King William Street is 103ft., the return frontage being 52ft. and the height 72ft. to top of parapet. There are five floors, including the basement. The lowest order consists of red Aberdeen granite pilasters on a massive stylobate the intermediate façade is of Portland stone, with ¾-columns of the same stone above a granite cornice at second-floor level.
1882.			
Corn Exchange, Mark Lane	I'Anson & Son	—	The market consists of a hall 120ft. by 60ft. The plinth of the façade is of Kenway grey granite, the upper portion being of Portland stone, with pilasters of polished red Aberdeen granite. The frontage to Mark Lane is 105ft.
London and Provincial Fire Insurance Company's Premises, corner of King William Street and Abchurch Lane.	Davis & Emanuel	30,000	The elevation is in Portland stone, profusely carved, and is 36ft. long, with a depth of 80ft. and a height of 58ft. There are five floors.
Metal Exchange Buildings Whittington Avenue, Leadenhall Street.	Edmeston & Son	—	The building has a frontage of 51ft and a depth of 128ft., and is 68ft. high. Granite piers are carried up to first-floor level, the rest of the building being in Portland stone, elaborately carved. The exchange room is 60ft. by 38ft. besides which there are fifty-two offices.
Shop for W Abbott & Son, 60, Ludgate Hill.	C. J. Phipps	—	The building is of red brick and red Dumfries stone.
Stationers' Co.'s Offices. corner of Ave Maria Lane and Amen Corner.	R. W. Mylne	30,000	The frontage to Ave Maria Lane is 105ft. long and 57ft. high to cornice and 64ft. to ridge. The ground floor is of Portland stone, with pilasters of the same material, above which are three storeys with malm facings. The buildings contain offices and warehouses.
1883.			
Attenborough's Premises, 193, Fleet Street.	Archer & Green	—	The elevations are of red Corsehill stone and red granite.
Brew & Claris's Premises, 54, Finsbury Pavement	Edwin T. Hall	—	The frontage is 90ft. long, and there are six floors. The facings are of red brick and the dressings of white stone.
Brown John & Co.'s Bank, Abchurch Lane.	J. Whichcord	—	The building has four storeys carried out in Portland stone, profusely carved. The bank occupies the ground floor; the other floors contain suites of offices.
Church Missionary Society's Buildings, Salisbury Square, Fleet Street, (additions).	Mr. Bracebridge	—	The additional building has a frontage of 26ft. The ground floor is of rusticated Portland stone, and the three upper storeys are of white Suffolk brickwork. The building contains new board-room and offices.
Eaton & Son's Premises, New Street, Bishopsgate Street Without.	Charles Bell	—	The building comprises offices on the ground floor, with a warehouse. The exterior is of white Suffolk brickwork, with Bath-stone dressings and cornices.
Spottiswoode & Co.'s Additional Buildings, St Bride Street.	Henry Dawson	30,000	The additional frontage is 106ft in length and 50ft. in depth, and the buildings are 80ft. high. The ground floor is in Corsehill stone and the upper portion in red brickwork.
Furniture Warehouse for Walker & Sons 119, Bunhill Row.	Davis & Emanuel	—	The warehouse has a frontage to Bunhill Row of 200ft. It is in the Italian style and is built of white bricks, with cement dressings.
London Joint Stock Bank Buildings, 123, Chancery Lane.	Mr. Harrison	—	The frontage to Chancery Lane is 60ft. in height and 50ft. in length. The ground floor is of Portland stone. and the upper floors are of yellow brickwork with red brick dressings and a deep cornice in Portland stone. The banking chamber on the ground floor is 60ft. deep. The basement floors are also used for banking purposes. The upper floors are planned as offices.
Middle Temple Chambers, 4, Brick Court and 5, Essex Court, Temple.	J. P. St. Aubyn	—	The block is 21ft. by 33ft., and is built of red brick with Portland-stone dressings.
Offices, 7, Bell Yard, Fleet Street.	Isaacs & Florence	4,341	The building is constructed of red Fareham bricks and Portland stone, and consists of offices with a shop on the ground floor.
Maxwell & Sons Premises, 8 Bell Yard Fleet Street.	Isaacs & Florence	—	The ground floor contains public offices and the first floor private offices over which are ware-rooms. The elevation is in Portland stone
Philip's Premises, 30, 31 and 32, Fleet Street.	G. E. Knightley	—	The front is of brown Portland stone, and is in the French Renaissance style.
Rochester Buildings, Leadenhall Street.	William Hudson & Son.	—	The building has a frontage of 80ft. and a depth of 123ft. The facings are of red brick, the dressings of Chilmark stone and the staircases of Craigleith stone. The carving was executed by Mr. Frampton.
Rylands & Sons' Premises, London Wall.	J. & J. Belcher	—	The facings are of red brick with Dumfries-stone dressings. Each floor has three-light mullioned windows. The carving was executed by Mr. Seale.
"Sportsman" Offices, Fleet Street.	W. B. Brown	—	The building contains four floors, a dormer storey, and a basement for machinery. It is faced with red Corsehill stone and has a granite basement. The frontage is 40ft. in length and 60ft. in height, and the depth is 120ft. The entrance has a pediment over, in which is carved the figure of a racehorse.

E.C. DISTRICT: BUSINESS PREMISES—*cont.*

Building.	Architect.	Approximate Cost	Remarks.
1883—*cont.*		£	
Stock Exchange Buildings, Throgmorton Street.	J. J. Cole	83,000	The area covered is 5,000ft. The frontage is 100ft. to Throgmorton Street. The foundations are carried to a depth of 36ft. The Exchange room is octagonal in shape, being 60ft. in diameter and 100ft. high to apex of dome. The basement is about 20ft. high from floor to ceiling. The property is worth about £100,000.
1884.			
Bourse Buildings, Bucklersbury.	J. Whichcord	-	The facings are of red bricks and Portland stone.
"Daily News" Offices, Bouverie Street.	T. Chatfeild Clarke	—	The façade is 100ft. in length and 70ft. high. The ground floor is faced with Portland stone, and the two upper floors with red brick and red Mansfield stone. There is a central entrance 20ft. in height.
Hitchcock. Williams & Co.'s Warehouse and Factory, Warwick Lane.	Searle & Hayes	-	There are seven floors to the building, which has a 60ft. frontage, a depth of 75ft. and a height of 65ft., with a basement and sub-basement carried to a depth of 24ft.
"New Stone Buildings," Chancery Lane.	- - - -	—	The buildings contain 300 offices, and the basement is fitted up as a safe deposit, with capacity for 5,000 safes. The frontage is 240ft. long with a depth of 100ft.
Office Premises corner of Finsbury Pavement and Cross Street.	J. W. Brooker	4,967	The frontages to Finsbury Pavement and Cross Street are 46ft. and 119ft. respectively, with a height of 62ft. White Suffolk bricks and Portland and Dumfries stones are used for the fronts, and polished Aberdeen granite for window dressings. The upper floors are offices and chambers.
Premises corner of Eastcheap and Love Lane.	Alexander Peebles	20,000	The building has an angular frontage and is surmounted by a dome.
Premises, 25, Abchurch Lane	T. E. Knightley	—	
Premises, 147 and 149, Cannon Street.	T. E. Knightley	—	
Office Premises, 4, Fenchurch Avenue, E.C.	Alfred Howard	—	The front elevation is faced with Portland stone, with red granite pilasters. The side is of white brick with stone dressings.
Shop Premises, 2, St. Pancras Lane.	T. E. Knightley	—	
Silber & Fleming's Premises, Wood Street, London Wall.	Ford & Hesketh	—	The frontage is 70ft. in length, and is divided on the ground floor into eight shops, which are separated by red granite piers. The four upper floors, rising to a height of 65ft., are in Portland stone, richly carved.
1885.			
Eastcheap House, "A.B.C." Depôt, Eastcheap.	George Edwards	7,599	The elevation is in Portland stone. The frontage is 50ft. long, and there is a return front 41ft. long. There are eight floors, two being below ground level
Hill & Sons' Bank, West Smithfield.	Scott & Cawthorn	10,000	There are frontages to Smithfield and Long Lane. They are in Portland stone.
Office Premises corner of New and Old Broad Sts.	E. T. Hall	—	The New Broad Street frontage is 40ft. in length. It is of red brick and Portland stone.
Office Premises, 38, Lime Street.	Alfred Howard	—	The front is of Portland stone, with Aberdeen granite piers to ground floor.
Office Buildings erected for the City of London Real Property Co., Ltd., Great Tower Street.	E. A. B. Crockett	—	The buildings are five storeys high, with a frontage of 147ft. to Great Tower Street and of 83ft. to Mincing Lane. The street fronts are of red sandstone, supported on pilasters of Aberdeen granite.
Premises, 31 & 34, Mark Lane.	Karslake & Mortimer	—	
Premises corner of Queen Victoria Street and Upper Thames Street.	W. Whimble	15,000	The Queen Victoria Street frontage is 60ft. long by 68ft. high, and is faced with Portland stone. The Upper Thames Street frontage is 78ft. high (owing to difference of level) and 40ft. long, faced with white Suffolk brickwork and Portland-stone dressings.
Premises for Pearsall & Co., Nos. 155 & 156, Cheapside.	Ford & Hesketh	—	The front is of Portland stone in a simple classic design. There are five floors above the ground floor and two basements beneath.
Shop and Office Premises, 63 & 64, New Broad Street.	Edwin T. Hall	—	Externally, the building is faced with red bricks with Portland-stone bands, dressings, bay windows, &c. The carving was executed by Mr. Mabey.
Sir Henry Peek's Premises, Eastcheap.	Alexander Peebles	—	The frontage to Eastcheap is 85ft. in length. the return front to Love Lane being 65ft. The two façades have the ground storey in Aberdeen grey granite, the upper portion being in Portland stone slightly carved in low-relief.
Warehouse for Francis Brian, New Inn Yard.	Christopher M. Shiner	—	Carried out in red brick.
Warehouse and Offices, 21, Bishopsgate Street.	Wadmore & Baker	--	There are five storeys built of red brick, with dressings of Tisbury stone.
1886.			
Harrild and Sons' Offices, 25, Farringdon Street.	T. K. Green & Son	—	This building is carried out in Renaissance style. It is of brick with terra-cotta dressings.
Legal and General Life Assurance Society's Offices, 10, Fleet Street.	R. W. Edis	—	The facings are of red brick with terra-cotta dressings. The lower portion of the building is occupied by the Society. The premises have a frontage of 50ft. and a depth of 200ft.
London Parcels Delivery Co.'s Offices and Stables, Rolls Bldgs., Fetter Lane.	W. S. Witherington	6,000	The frontage is 40ft. and the depth 100ft. The ground floor is carried up on blue Staffordshire brick piers. The two upper storeys are in stock brickwork.
Offices and Sale Rooms, 31, Fenchurch Street.	Collier & Merrin	—	The front is of red Corsehill stone, the ground storey being of red granite, with transoms and mullions to windows of the same material. The carving is by Mr. Frampton.
Prudential Assurance Co.'s Offices (additional building), Holborn.	Alfred Waterhouse	—	The additional building is 140ft. long and contains five floors. It is uniform in design with the then existing buildings, and is of red brick and terra-cotta.
St. George's House, Eastcheap.	Delissa Joseph	—	The building is designed in the free classic style, with details of French Renaissance tendency. It has a frontage of 100ft and a height of 85ft. There are six storeys in the front building, which consists of five bays, divided by fluted pilasters, with carved caps, the whole being in Portland and Beer stones, except the ground-floor portion, where the columns and pilasters are of red Aberdeen granite.
Shop Premises corner of Ludgate Hill and Creed Lane.	Joseph & Smithem	—	The ground floor contains shops with granite pilasters and Portland stone above, profusely carved. The frontage is 44ft. to Ludgate Hill and 46ft. return front. The building contains five storeys.
Steven Brothers & Co.'s Premises, 4, Upper Thames Street.	James Weir	—	
Winchester House, Old Broad Street.	F. T. Pilkington	—	
1887.			
Bank of England, Fleet Street Branch.	Sir A. W. Blomfield	—	The building has a rusticated base of Aberdeen granite 11ft. high. The superstructure is of Portland stone, polished granite being used for the columns, panels and spandrels. The lower portion of the building is devoted to banking purposes, while the upper portion forms the manager's residence.
Game, Son, Harrison & Larner's Premises 2 & 4, Eastcheap.	E. & E. B. Ellis	—	The first, second and third floors are devoted to offices. The ground-floor storey is of red granite, above which is Portland stone.
Ingram House, 165, Fenchurch Street.	Thomas Blashill	—	The building consists of three shops, offices and store-rooms
Lloyds Bank, Ltd., 71, Lombard Street.	J. A. Chatwin	—	The frontage is 84ft. in length, and the building has a depth of 82ft. The lower portion of the façade is in grey Cornish granite, and the first floor is carried on Doric shafts 17ft. high, the upper portion being of Portland stone, with Ionic columns supporting the cornice. The banking room on the ground floor is 61ft. by 55ft. The directors' board-room is on the first floor, and strong-rooms and lavatories are situated in the basement.
Office Premises, 68 & 70 Finsbury Pavement.	Theodore K. Green	—	The front is of red brick and terra-cotta.
Offices and Warehouses, 73, 74 & 75 Lower Thames Street.	Banister Fletcher	—	The front is faced with Bath stone and red brick.
Stock Exchange Buildings, Throgmorton Street (additions).	R. L. Cole - -	—	The building has a frontage to Throgmorton Street of 96ft. The Octagonal Hall has a dome 70ft. in diameter and is 100ft. in height. The plinths are of Peterhead granite, and the arches, cornices, &c., of Portland stone. The street fronts are also of Portland stone and granite. Below the exchange is the settling-room.
Premises, corner of Eastcheap and Gracechurch Street.	Delissa Joseph	-	These premises are designed for the tea and foreign fruit trades. They have a frontage of 100ft., and consist of six storeys 85ft. high. There are red Aberdeen granite (polished) pilasters and columns, with capitals carved to represent fruit by Mr. Gilbert Seale.
St. Martin's House, Ludgate Hill.	Joseph & Smithem	—	The building is in the Italian Renaissance style. It contains shops on the ground floor.

(To be continued.)

Keystones.

The Royal School of Art Needlework, in Exhibition Road, S.W., of which Mr. F. B. Wade, F.R.I.B.A., is the architect, is to be formally opened by the Prince of Wales on Wednesday, April 29th, at 3.30 p m.

Bury Park Congregational Church, Luton, Beds., is being erected. It is to be faced with red bricks with Costessey brick dressings. The contract is let to Messrs. T. & E. Neville, of Luton, at £4,420. The architects are Messrs. George Baines, F.R.I.B.A., and R. Palmer Baines, 5, Clement's Inn, Strand, London, W.C.

A West Hartlepool Competition. — The assessor, Mr. John W. Simpson, F.R.I.B.A., in the competition for a school for the West Hartlepool School Board, has awarded the first place to Mr. Richard Holt, of Liverpool; the second to Mr. James Carry, of West Hartlepool; the third to Messrs. Bottomley, Son & Wellburn, of Middlesbrough; and the fourth to Messrs. Jones & Sellers, of Oldham.

The Bristol Society of Architects held its annual general meeting last week, Mr. Joseph Wood presiding. The following officers were elected:—President, Mr. Joseph Wood; vice-presidents, Mr. G. H. Oatley and Mr. F. W. Wills; members of the Council, Messrs. W. L. Bernard, F. Bligh Bond, J. H. La Trobe, Thomas Nicholson, W. S. Skinner, J. Foster Wood, and H. Dare Bryan, hon. secretary and treasurer; associate members of Council, Messrs. Mowbray A. Green and T. H. Weston.

Competition Reform Society.—The committee disapproves of the existing conditions of the competition for public baths at New Brompton, because—there is no assessor, the council do not bind themselves to carry out any of the designs, and the remuneration is unsatisfactory. They therefore request their members to abstain from competing unless they receive a further communication to the effect that the conditions have been satisfactorily revised. All members who have received conditions of the Maidenhead free library competition are also requested to write to the town clerk protesting against the unsatisfactory clauses.

The Devon and Exeter Architectural Society held its annual meeting at Devonport on April 4th. The council reported, among other things, that it was gratifying to know the exception taken to the conditions of the St. Ives town hall competition had resulted in only one set of plans being submitted, and these were not adopted on the promoters' discovery that architects had declined to compete. Mr. J. M. Pinn, in his presidential address, said he was somewhat sorry the Gothic style had latterly gone out of fashion for secular buildings; and, speaking of registration, he expressed himself not much nearer being convinced that it would benefit the profession than he was some years ago. Mr. A. S. Parker, A.R.I.B.A., was elected president for the ensuing year and Mr. C. Cole vice-president. — The Three Towns branch of the Society held its annual meeting on April 3rd at Plymouth. Mr. A. S. Parker, who presided, referred to the local by-laws, and the endeavour of their committee to get them reformed. The committee intend to consult the borough officials before petitioning the Council to take the matter into consideration. Mr. Parker was re-elected chairman, and Mr. E. Coath Adams appointed hon. secretary and treasurer. Mr. B. Priestley Shires was accorded a hearty vote of thanks for his services during the past five years. Mr. W. H. May was appointed hon. librarian. The following committee was elected: Messrs. Leest, Lethbridge, Shires, Lister and Dwelly.

The Liverpoool Architectural Society (Incorporated) held its annual meeting last week, Mr. John Woolfall presiding. The following officers were elected:—Messrs. T. E. Eccles and P. C. Thicknesse, vice-presidents; Hastwell Grayson and Gilbert Fraser, hon. secretaries; James Dod, hon. treasurer; Alan G. James, hon. librarian; H. P. Mortes and W. Glen Dobie, auditors. The following were elected Fellows of the Council:—Messrs. J. Dod, H. Hartley, E. P. Hinde, E. A. Ould, S. Pugin, W. E. Willink and Prof. F. M. Simpson. Associates elected for the Council were Messrs. Alan G. James and A. Thornley.

Obituary.

Mr. William Botterill, of Hull, one of the best-known architects in the East Riding, died last Thursday week. He was born at Brompton, near Pickering, in 1820, and went to Hull more than half a century ago to act as clerk of works under Mr. Andrew, of York, the architect of the hotel at the Paragon Railway Station. He continued in practice alone as an architect and surveyor until about 1876, when he took his son into partnership. Mr. John Bilson, F.R.I.B.A., joined the firm in 1881, shortly after the son's death, and it has since been known as Botterill, Son & Bilson. He was architect and surveyor under the Hull School Board, most of the public elementary schools in the city having been erected from his designs and under his supervision. Among his well-known buildings at Hull may be mentioned the Hull Exchange, the York City and County Bank, the Danish Lutheran Church, St. Philip's Church, the Port of Hull Society's Orphan House (now the Hull Technical School), and several Wesleyan chapels, including the Beverley Road Chapel. One of his latest works was Hymers College, which he designed in conjunction with Mr. Bilson. Mr. Botterill retired from business in 1899.

Law Cases.

A "Building" under the L.B.A.—At North London Police Court last week the "Pyrojim" Syndicate, Ltd. (who are experimentally trying to make the refuse of Islington into patent fuel), were summoned for contravening the London Building Act by erecting a building without the necessary sanction of the L.C.C. The defence was that the sanction of the Islington Borough Council had been obtained for a wooden structure (such as this was), and that was sufficient. There was an engine and boiler inside, with a 30ft. funnel through the roof, and it was said that the wheels would have to be put on the engine and boiler, and the funnel taken off, in order to remove them from what was submitted to be a temporary structure.—The magistrate held that it was a building within the meaning of the Act, and ordered a conviction, with 40s. penalty.

Wrongful Dismissal of an Architect.—In the King's Bench Division last week Mr. Justice Walton delivered a considered judgment in the case of *Waterman* v. *the London (Riverside) Cold Storage Co., Ltd.* It was an action by Mr. W. H. Waterman, an architect and surveyor, of Cullum Street, against the defendants for wrongful dismissal, and for £1,108 0s. 11d., the balance of fees for work done and money expended for and on behalf of the defendants. The plaintiff had acted as the defendants' architect for some time. On a dispute arising as to the underpinning of a wall at Symons' Wharf, he was dismissed on the ground that he had committed a breach of duty. His Lordship held that the defendants had failed to establish any such breach of duty by the plaintiff, and gave judgment for the plaintiff for £953 11s. 9d., after deducting certain payments.

Builders' Notes.

L.C.C. Trams. — The London County Council has accepted the tender of the British Westinghouse Co. for 200 electric tramcars, to cost £111,000.

Holborn - to - Strand Plots.—The eastern horn of the crescent has already been submitted to public auction, and it is proposed to offer various other plots for letting on lease in June next.

A Strike in New York has occurred on the part of the Brotherhood of Carpenters and Joiners: 9,000 members of this union ceased work on Wednesday last because 2,000 workmen from the Amalgamated Society of Carpenters, which is affiliated to the English organisation of Manchester, were employed on certain buildings which are in process of erection.

Cardiff Painters.—The members of the Cardiff branch of the Amalgamated Society of House Decorators and Carpenters are asking for an addition of 1d. an hour increase in wages from May 1st next. There is a fear that the men will strike, as the employers are not disposed to favourably entertain the request. The men also seek other concessions

A Dispute at St. Helens has occurred between the joiners and the masters, the former refusing to fix what is known as foreign or ready-made joinery, such as doors, window-sashes, &c. The employers resent the men dictating to them as to where they shall purchase their materials. The masters have decided that unless the men withdraw their opposition there will be a general lock-out on Monday next. Both sides are firm, and a lengthy dispute is probable.

Messrs. Mellowes & Co., of Sheffield and 28, Victoria Street, London, have received the order for covering with their patent "Eclipse" glazing the roofs over Lostock Hall Station (for the Lancashire and Yorkshire Railway); Royal Naval College, East Cowes; electric station for the Leek Urban District Council; extension to shops for Messrs. J. H. Andrew & Co. at Sheffield and for Messrs. Leys at Derby; also the plumbing work at the last-named shops.

The Incorporated Institute of British Decorators held its annual dinner last week at the Trocadero Restaurant. The president (Mr. J. D. Crace) was in the chair. Mr. W. G. Sutherland, in proposing "The Incorporated Institute of British Decorators," said the Institute was the apex of a movement which began about ten years ago. The first idea of the Institute came from Scotland, but the scheme was taken up with great enthusiasm by Englishmen and Irishmen. He thought that no little part of this was due to the fact that they were associated with the Painter Stainers' Company, and it was also to their first and only president, whose name was known throughout the entire kingdom as the representative of a long line of artists and decorative artists. Their membership was nearly 400.

Building in South Africa.—A number of new buildings are in course of erection at the East Rand. At Boksburg a large double-storey hotel will soon be in the hands of the builders, to cost about £5,000. Zeeman's Buildings are costing £4,000. A Presbyterian church is being erected at a cost of £5,000 by the contractor, Mr. J. J. Fowle. The front of the building will be let as shops, the church being in the rear. The Masonic Temple at Boksburg will shortly be in the hands of the builders. Plans are also in readiness for the building of a brewery at Springs, to cost between £4,000 and £5,000. An hotel is also being built at Benoni, to cost £2,000. A private residence is being erected at Elsburg, to cost £4,000.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Church Ventilation.

London.—S. C. C. writes: "Are there any books dealing at length with modern requirements of ventilation in places of worship?"

"The Ventilation, Heating and Management of Churches and Public Buildings," by J. W. Thomas (Longmans, Green & Co.).

Buildings to Measure near Abergavenny.

Swansea.—Abertawe writes: "What churches are there in the neighbourhood of Abergavenny, Mon., suitable to measure for the R.I.B.A. intermediate examination?"

Abergavenny is situated on the Welsh Marches, or debatable land between England and Wales. It is therefore to be expected that very little building was done in the neighbourhood during Gothic times. Abergavenny Church (St. Mary's) contains original doors and windows, which may be worth examining, but really satisfactory work is not to be looked for much nearer than Tintern in one direction and Ross in another. G. A. T. M.

"Public" and "Domestic" Buildings under the L.B.A.

London, S.W.—J. P. B. writes: "Can a public building (say, an hotel with sleeping accommodation for more than 100 persons) be also considered a 'domestic building' or 'dwelling-house' under the London Building Act, 1894, and would the example mentioned have to conform to sections 41 or 43 of the Act?"

We have made enquiry, and are informed on good authority that the legal advisers of the London County Council, to whom the question has been referred, are of opinion that a building may be at the same time "a public building" and "a domestic building" for the purposes of the Act, and as such would be required to conform with all sections of the Act regulating the two classes of buildings. The point has not, it is believed, been decided judicially, but you may take it, until a decision has been given to the contrary, that this is the state of the law. H.

Boundary of Property.

Brighton.—Nimaneb writes: "I am dealing with some land bounded originally by a hedge and ditch, both of which belonged to my clients, the ditch being outside the hedge. This ditch has been filled in by the adjoining owner. I suppose our claim to its site is limited to a line 3ft. from the roots of our hedge, or can we claim the whole original width of the ditch? The line 3ft. from the hedge-roots would probably be about the middle of the old ditch."

In the absence of evidence to the contrary, the legal presumption exists that the ditch belongs to the property on that side of the hedge on which the ditch is not. In your case the ownership does not appear to be in doubt, but only the distance from the stake-root of the hedge. In some places 3ft. from the roots of the quickwood are allowed for the breadth of the ditches, and in exceptional cases 5ft., or even 6ft., are allowed. The most usual custom, however, is to allow 4ft., and you will find all parish boundaries so marked upon the 28in. Ordnance maps. I presume the ditch in question has never formed the bed of a stream, as in such case each riparian owner can only claim one-half of the bed. I would advise that you claim 4ft. as the proper distance from the centre of the hedge, insert wooden stakes upon the actual boundary so found, and then draw the adjoining owner's attention to them, that no dispuse may hereafter arise should it be desired to build to the boundary. If considered advisable, the little stakes may be branded with name and date—they should be of oak if intended to remain for any length of time. G. S. M.

Land Drains.

Liverpool.—G. B. writes: "The site upon which part of a church stands (sketch plan not reproduced) is of exceptionally wet clay with a fall of about 1 in 10. It is proposed to cut a rubble drain across the site. Which is the best method of laying it and also connecting to the sewer?"

The sketch plan should have shown the inclination of the ground, but we presume the proposed rubble drain is to be at the higher end of the site and is designed to take the water from the upper slope. With heavy wet clay soil we do not think either the rubble drain or the position assigned to it suitable. We recommend the proper unglazed butt-jointed earthenware pipes 3in. in diameter laid in straight diagonal lines across the site, the lines 12ft. apart, or perhaps 10ft. as the soil is so wet. They should be laid at a depth of 2ft. 9in. to 3ft. 6in., have a fall towards main land drains (4in. diameter pipes) laid on left side and lower end of site, having outfalls into the trapped manhole discharging well above the invert of the latter. The main drain should be laid 3in. deeper than the sub-mains, so that the ends of the latter rest on the top of the main drain pipes. If the land drain pipes are not procurable, or are very expensive, the same scheme can be carried out with rubble drains, which, however, are not so efficient or permanent. Such drains would be considerably larger in size and should have flat stones at the bottom, stones for uprights at sides, and be covered with another flat stone. All drains, whether pipe or rubble, should have a covering of turf, gorse or brushwood, or even coarse ashes, to prevent being choked with loose earth.

Sewage Outfall Works.

Worksop.—A. H. R. writes: "Kindly state at what height a sill for a storm-water overflow should be fixed under the following conditions:—The earthenware pipe is of 15in. diameter and laid to a gradient of 1 in 700. The dry-weather flow is 40,000 gals. per day. After this has become diluted three times (120,000 gals.) it is required for the excess to overflow direct on to the land; then, again, after being diluted six times the dry-weather flow the excess is to pass direct into the stream."

You do not give sufficient data to enable us to express an opinion. The problem of the relation between the rainfall and the sewer discharge is one of the most difficult that confronts the engineer, and the volume in heavy storms can only be ascertained by careful and prolonged record of rainstorms in the district to be drained. Even then the figures obtained would be only approximate. The amount of storm-water might be sufficient to fill the manholes and choke the entire sewer, and its discharge at the outfall would be at a greatly increased velocity, caused by the pressure. In any case the storm-water would not reach the outfall at the regular rate which would enable you to put such a system as you mention into operation: for instance, 240,000 gals. (the normal flow diluted six times) per day would be 1,000 gals. per hour. Your 15in. pipe could discharge 1,000 gals. in about three minutes with the gradient mentioned and some pressure. We advise you to consult "The Sewerage Engineer's Notebook" by A. Wollheim, 3s. 6d. nett. (St. Bride's Press, Ltd., 24, Bride Lane, E.C.).

Calculating Scantling of Timber.

London, W.—H. K. W. W. writes: "What would be the scantling of a piece of timber carrying a safely-distributed load of 20 cwts. over a span of 10ft., using the formula $\text{B W} = \frac{2cbd^2}{\text{L}5}$?"

The formula suggested, $\text{B W} = \frac{2cbd^2}{\text{L}5}$, may be more simply written, $\text{B W} = \text{C}\frac{bd^2}{\text{L}}$. Here B W represents the single load in cwts. placed in the centre of the span, which would cause rupture in the beam; C (the equivalent of $\frac{2c}{5}$), a constant varying, according to Hurst, from 3·6 for white spruce fir to 4·0 for Dantzic and Memel timber, all being of selected quality; *b* the breadth and *d* the depth of the beam in inches; and L the unsupported length or span in feet. For convenience, assuming C to be equal to 4, we have $\text{B W} = 4\frac{bd^2}{\text{L}}$. The load required to be borne *safely* is 20 cwts. distributed. The effect of such a load would be equivalent to a single central one of 10 cwts. A factor of safety of from 7 to 10, according to circumstances, should be adopted, and using the latter figure, viz., 10, we obtain an equivalent *breaking* load of 10 cwts. by 10, or 100 cwts. Substituting now the above equation we obtain $100 = \frac{4bd^2}{10}$, whence $bd^2 = 250$. Assuming a depth of 9in., we have $b \times 9^2 = 250$, or $b = \frac{250}{81} = 3$. A 3in. by 9in. would be sufficiently strong. This answers the question; but a better and less rule-of-thumb method is that indicated in my article on bath floors in the Builders' Journal for April 3rd and 10th, 1901. The questions of the necessary stiffness of the beam and the proper factor of safety according to the character of the load to be supported are alluded to there, and ought to be taken into consideration in any case in practice. The reason why a single central load has twice the effect of a distributed one as regards bending moment is given in most text-books.

E. B. B. NEWTON.

Comparison between Plain Wall and Rough-cast Wall.

Harrow.—Atlantic writes: "(1) How would a 9in. brick wall of Flettons, rough-cast on the outside, compare for rain and weather-resisting with a 14in. brick wall of good facings outside and Flettons inside? (2) What is the best method of rough-casting for the above purpose? (3) How would the two walls compare in cost?"

(1) In all probability the 9in. wall with rough-cast would prove drier than the 14in. solid work, though something depends on the quality of the bricks used in the latter case. If, however, the expense of a 14in. wall be not objected to, why not build it hollow, and so make it certainly waterproof? See articles in The Builders' Journal for January 16th, 1901, or in "Specification, No. 5," pp. 253 and 255. (2) Details of external plastering are given on p. 544 of "Specification, No. 5." I agree with what is there stated, namely: "Portland cement is unquestionably the best material for external plastering—for weather-resisting properties, strength and capacity for moulding and painting, it is unequalled." Rough-cast is, however, often executed in lime (best if used hot) instead of cement. (3) The 9in. wall and rough-cast would no doubt constitute the lower-priced work. It may interest you to hear that I have recently made a very damp and porous 9in. wall perfectly dry and weather-proof by covering it externally with corrugated iron sheeting, placed vertically, and secured to battens in much the same

way as "weather tiling" is done. The whole being painted stone colour, its appearance is not found objectionable. G. S. M.

Building Construction.

J. T. writes: "In what issues did the new articles on building construction appear?"

November 12th and 26th, December 3rd, 17th and 31st, January 14th, February 4th and 18th last.

Dancing Steps in Stairs.

SPRINGFIELD.—C. W. writes: "What is the method of finding the centres for dancing stairs? Rivington mentions it in Part 2 of his 'Building Construction,' but does not give a method of finding the points from which the steps radiate."

The steps in all cases should be set out on plan of a uniform width (fliers and winders alike) along the line that one would naturally take in mounting. This line, which is referred to as the "going line," "line of travel," "line of ascent," should be taken at a distance of 16in. to 18in. from the plan of the centre line of the handrail. The equal spacing along the going line, indicating the number of steps, will of course depend on the plan space available from "start" to "land" of stair considered in relation to the fixed height to be reached so as to give a suitable proportion of tread to rise. Then, whatever direction the riser lines may be made to assume, they should pass through these previously-determined points on the going line. The natural disposition of the riser lines would be when directed normally or perpendicularly to the line of ascent; but when this arrangement is rigorously adhered to it will in general (always in the case of small wells) make the ends of the winders at the well unduly narrow as compared with the width of the fliers, and as a result there will be sudden changes of pitch in passing from fliers to winders, shown on the "falling lines" of the well string and handrail. These objectionable features may be greatly modified by making the winders and two or more of the adjacent fliers "dance," that is, swinging the riser lines round upon the fixed points on the going line—already referred to—as pivots out of their normal position and making them pass through a second series of points, usually determined on the plan line of the centre of handrail. Probably no definite rule could be laid down for determining the latter series of points which would answer in all cases, as the number of fliers that should be distorted will be, in any case, more or less a matter of opinion. It is clear that if the arrangement result in giving excessive obliquity to the riser lines this may prove a positive defect. In practice it will generally answer well enough to increase the end of the winder occurring in the middle of the well about $\frac{1}{2}$in. beyond what would be its width if a normal disposition of the risers had been adopted, and for the ends of the other steps between it and the first untouched flier to gradually increase their width by an equal amount (determined by their number) so that the flier would form the last term of an arithmetical series. Thus, if there were four intermediate steps, width of flier 10in. and that of end of tread in middle of well made 5in.,

$$\text{amount of increase} = \frac{10\text{in.} - 5\text{in.}}{5} = 1\text{in.},$$

so that the successive widths would be 5in., 6in., 7in., 8in., 9in., 10in. Before drawing in the riser lines finally, however, it may be well to draw out a development of the section of the steps, thus obtained, made by the cylindric surface, standing over the plan line of the centre of handrail to test whether an agreeable falling line results from the arrangement. Another method often employed in practice is to lay off a suitable falling line first and make the widths of the steps at their well ends conform to it.

W. & A. M.

SANATORIA FOR CONSUMPTIVES.*

By BANISTER F. FLETCHER, A.R.I.B.A., F.S.I.

THE expediency of providing properly-designed sanatoria for consumptives has been much discussed of late, and attention has been drawn to the necessity for an increased number of such institutions by the recent competition instituted by his Majesty the King.

It must be borne in mind that the value of sanatoria is of a twofold nature; for not only do they act as important curative agents, and rescue many a valuable life from early death, or at least from diminished usefulness, but the discipline and habits of hygienic cleanliness carried out in them are often far-reaching in their effects.

Of the value of pure air there can be no doubt, but much can be done even under apparently very restricted surroundings. Many of the Poor Law infirmaries in London and the provinces are conferring a lasting benefit on their phthisical patients by simply treating them in the open balconies and corridors adjoining their general wards. During this last winter patients may have been seen at some of these institutions lying on a stone balcony protected only by a roughly-improvised shelter of tarpaulin and blankets on the windward side, and yet making rapid progress towards recovery in spite of cold, wet, and London fogs combined. Such surroundings are far removed from the ideal which a sanatorium should present.

An ideal situation should have an easily-drained porous soil, good protection against cold winds, and a reasonable amount of sunshine, whilst it should be far removed from densely-populated districts in which dust, smoke and other impurities are ever present in considerable amount. Many such localities may be found in our English climate, and therefore need not necessarily entail a long, tiring and expensive journey by the would-be patients, a matter of considerable importance.

It would almost seem as if we are rediscovering for the benefit of our consumptive patients the advantage of shelter which was afforded by the old English garden with its lofty yew hedges. Centuries ago or more such hedges were common, as Evelyn testifies, and even further back we see in the Temple of Æsculapius at Epidauros, in Greece, semicircular shelters formed of brick and covered with half domes in which the patients reclined to bask in the sun. The treatment, however, of phthisical cases does not consist merely in fresh air, but in special dietary and regulations made for each case.

In regard to recreation, the accompanying plan (which is a rough copy of that which I submitted, in collaboration with Mr. W. Bruce Clarke, for the King's prize essay) shows the whole of the southern front laid out in terraces and gardens for walking exercise and games such as bowls or croquet. Other exercises or recreations, such as photography, sketching, &c., will find a place when the doctor permits; but these occupations, as well as chess, draughts, dominoes, or even reading, must, during the early periods of the patient's stay, be determined by his general condition.

In preparing the design the first important thing to determine was whether to adopt a cottage or block system (as at Nordrach) or a concentrated type of plan in which the various departments should be under one roof. Having regard to efficiency of working and the climatic conditions prevailing in England, we decided on the latter type.

It is essential that plenty of fresh air and sunshine should be provided, accompanied by shelter from prevailing winds. With a view to ensure this, the patients' rooms should in all cases face south, and the buildings generally be so arranged as to afford shelter from the north and east.

Administration: Officials.

The sanatorium is planned for 100 patients (twelve paying patients and eighty-eight non-paying patients). The number of officials, servants, &c., for whom accommodation has been provided are as follows:—

Three qualified medical officers. It has been found that not more than about forty patients can be satisfactorily attended to by one doctor. In this instance, therefore, we have assumed that three doctors will be necessary. A detached house to the north of the main building has been provided for the principal medical officer. It has been placed in this situation so that he may be in full view of the chief entrance and have knowledge of all persons entering the grounds.

The quarters for the two junior officers are in the main building, as are also those for the chaplain, secretary and kitchen clerk. The two latter would certainly require to be on the spot, and must sleep either in or near the building. The chaplain might or might not do so; in many sanatoria no attempt has been made to provide for him.

The matron's quarters consist of two sitting-rooms, three bedrooms, bathroom and office, and allow her to have a servant of her own. This is about the usual amount of space assigned to her in most hospitals and infirmaries in London.

Thirty bedrooms in all have been provided for nurses, which is probably in excess of what is needed. The following nursing staff would certainly be required:—On day duty: Two sisters on the ground floor for the twelve paying patients; one sister on the first floor, with four nurses for forty-four patients; one sister on the second floor, with four nurses for forty-four patients. On night duty: one night superintendent and three nurses, one on each floor. Extras: one home sister to look after the general arrangements of the nurses' floor, and four nurses for extra duty, in the event of nurses being ill or away, or the extra nurses being required for patients. This brings the total nursing staff, exclusive of the matron, to twenty, but several more will be needed if weak patients are allowed to be about in the grounds, where they will require the services of a nurse at frequent intervals.

In the servants' quarters (north block) separate rooms are provided for the housekeeper and assistant housekeeper and eight bedrooms capable of containing two beds each for the wardmaids and other female servants. Five or six wardmaids would be required for the patients, leaving ten beds for the remaining female servants.

Eleven bedrooms, each capable of containing two beds, are all that is needed for the porters and men servants, especially as there is no reason why some of them at any rate should not sleep outside the building. Such details as these must be calculated, as on them depends the general arrangement of the plan.

General Arrangement.

First and foremost we have borne in mind that sunlight is required for all the living-rooms of the patients; hence, they all face south. With such a condition, some sort of plan as that which is proposed seems necessary. Thus the general scheme resolves itself into an inverted Y in which the patients are placed in the two forks, the administration in the shank, and the service in the northern cross-pieces. To the south are situated the sunk gardens, fishponds, sun-shelters, tennis-courts and bowling greens, and an attempt has been made to give this the appearance of an old English garden by yew hedges and a formal arrangement.

A shelter has this advantage when it is made to face different directions (as those on the ground floor), that by means of a single or possibly a double-glass screen the temperature may be rapidly altered from hot to cold, so that the patients may bask in the warm sunshine if the cold north-easter prevails, whilst in the heat of midsummer a cool northern aspect is readily available to keep them comfortable. If both sides are closed, as they readily can be, a winter garden is at once extemporized. Shelters are provided within the buildings and in the grounds.

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* A paper read before the Leicester Society of Architects on January 29th, 1903.

Immediately to the north of the main block of buildings is situated the chief medical officer's house, so arranged that his principal living-rooms may face south.

The mortuary (with research laboratory over) is arranged in a sufficiently remote position to the west, but of easy access. Provision should, where possible, be made for scientific research in these institutions. The extent to which such research is to be carried out would depend on the time which the medical staff or their assistants could give to it. Under these circumstances it has seemed best to provide at a little distance from the main building a small block in which could be accommodated a mortuary and mortuary chapel, a post-mortem room, with rooms over for research purposes. It may possibly be contended that no deaths are likely to occur and no post-mortem examinations are therefore likely to be made. However unlikely this is, and it may be readily conceded that they would not be frequent, it seemed hardly wise not to make some provision of the kind, and a research laboratory is most conveniently placed in proximity to a post-mortem room. Even if the opportunities for microscopic examinations were seldom afforded, bacteriology would certainly be demanded.

A basement is provided for heating purposes and storage. A cold chamber for refrigerating the dead bodies is provided of such a size that it could be fitted with a Hall's brine-feeding machine. Part of the basement could be devoted to a centrifuger. One of the best of these, which is in use at the recently-opened pathological laboratory at Oxford, is made by Runne of Heidelberg, and while capable of making 2,800 revolutions a minute, does not occupy much space.

The ground floor of this research block is occupied by the post-mortem room, mortuary and mortuary chapel, with staircase leading to the research laboratory above. On the first floor is a room for microscopic work on the north, one for bacteriological research and microphotography, and a private room where the pathological worker could have access to books and papers. Such a research laboratory could accommodate three or four workers with ease, and could be readily enlarged to make room for as many more as might be required.

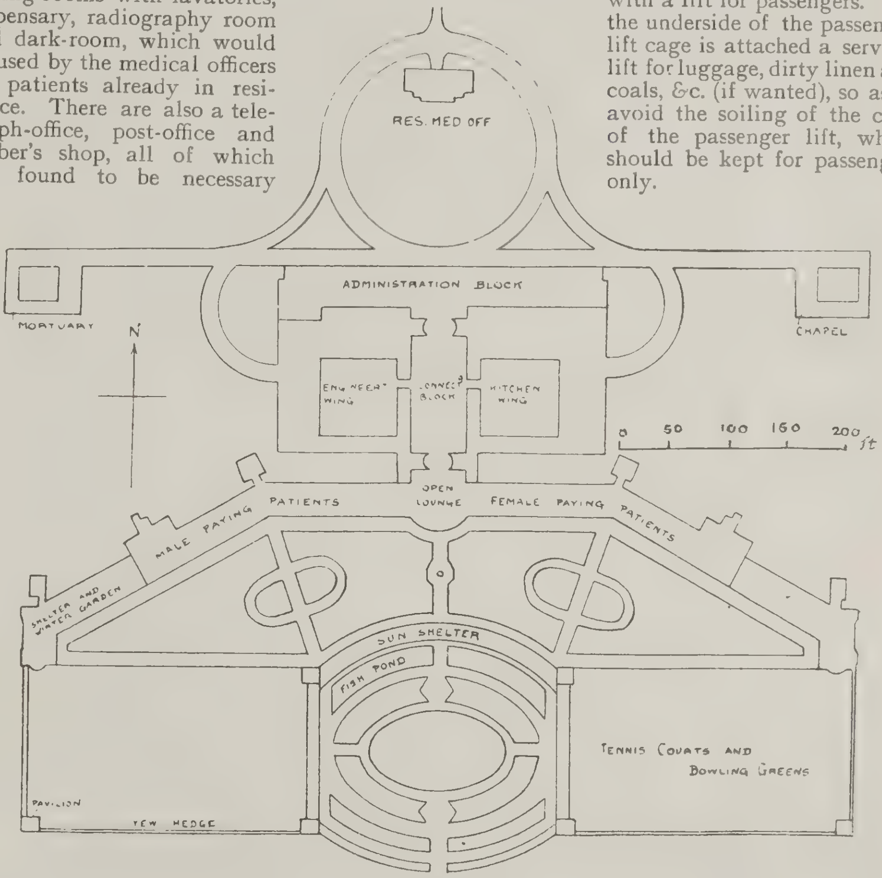
There is a lantern in the centre by which the post-mortem room obtains a good top light, and additional light is also given to the research rooms, should they want it, by the same means.

The chapel, should one be desired, is placed to the east of the site. It is quite possible, however, that the dining hall would be used for this purpose.

Ground Plan.

Taking each floor seriatim, we may thus describe the general arrangement of the scheme :—The main entrance is towards the north, and is effected through a porte-cochère or main entrance porch. A porter's lodge and telephone to all parts of the building are in close proximity. The eastern portion of this northern block contains a waiting-room for patients proposing to enter the establishment, a secretary's room, strong-room, kitchen-clerk's room and the lower portion of the matron's house, which consists of two sitting-rooms, three bedrooms, bathroom and offices, and is entirely cut off from the main building, though with ready access to it. The western block contains the medical officer's office, the consulting-room in which he can see intending patients and determine on the suitability of their cases, the chaplain's room, the board-room with lavatories attached, and the quarters for the two junior medical officers, each of whom is provided with a sitting-room and bedroom, and a joint bathroom, lavatory and w.c. Over this portion is the engineer's house, reached by a separate staircase from the yard, and described in connection with the first floor. Towards the centre of this northern block are two staircases leading to the serving-room attached to the dining-hall on the first floor, and to the male and female servants' bedrooms.

The connecting block between the administration and the patients' quarters has a central corridor, off which are two consulting-rooms with lavatories, dispensary, radiography room and dark-room, which would be used by the medical officers for patients already in residence. There are also a telegraph-office, post-office and barber's shop, all of which are found to be necessary in sanatoria. The remainder of this portion is given up to the servery, with lifts to dining hall on first floor, nurses' dining-room, servants' dining-room and housekeeper's room, &c. ; thus making these several departments easy of access for all purposes.



To the east of this connecting block is the kitchen block, cut off by a ventilating lobby from the main building. This block contains a central kitchen, 30ft. square, carried up above the surrounding rooms and lit from high windows. Around this compartment are placed the pantries, larders, refrigerating rooms, sculleries and storerooms, all disconnected from the kitchen and thoroughly ventilated. The kitchen wing is only carried up one storey in height, so as not to interfere with the light of the surrounding buildings.

The western wing, corresponding to the kitchen wing on the east, is occupied by the laundry, disinfecting-room and engines. We gave considerable thought as to whether this could be placed with advantage so near the main building, but from previous experience are of opinion that great economy will result therefrom. All chances of vibration can be avoided, but of course the whole block could be moved to a greater distance if it should be desired. The block contains a central washhouse, 30ft. square, corresponding to the kitchen in the eastern block, and around this are arranged engine- and dynamo-rooms, accumulators, workshops, laundry, disinfecting-room, distributing rooms and drying-rooms. A disinfecting chamber has been provided in connection with the laundry, by means of which any linen, bedding, &c., can be subjected to the action of dry superheated steam, either before being washed or when specially demanded for purposes of disinfection. Any approved disinfector can be supplied for this purpose. This department should be under the charge of a competent engineer, accommodation for him being provided over the junior medical officer's quarters to the west of the entrance block.

Returning into the main corridor, with its axis north and south, and proceeding southwards, two main staircases are shown, each with a lift for passengers. To the underside of the passenger lift cage is attached a service-lift for luggage, dirty linen and coals, &c. (if wanted), so as to avoid the soiling of the cage of the passenger lift, which should be kept for passengers only.

Centrally is the great open lounge, about 50ft. long by 30ft. wide, with circular front. This may be fitted with movable screens facing the gardens, and acts as a central shelter or sun lounge. On either side of it are placed two consulting-rooms for the use of the principal medical officer when in the building, and two rooms for the matron when on duty. A ready means is thus afforded for obtaining excellent supervision of the medical treatment and of the nursing arrangements. Small rooms for boots are also provided on each side.

East and west in the inverted legs of the Y are placed the six female and six male paying patients, each having a bed- and a sitting-room 13ft. by 14ft. and 11ft. in height, thus giving a cubical capacity of 2,002ft. to each patient both in the bed- and sitting-room. Each side has a spacious corridor on the north, into which the sanitary blocks open. These latter have lavatories, bathrooms and a slop-sink. A disconnecting ventilating lobby is also provided to each.

A service block is provided off the corridor to the north, containing room for the nurses in charge, linen-room, ward kitchen, coal place, outside lift for dirty linen, coals, &c., and nurses' w.c. Each block for paying patients has also a large room, which is provided with movable screens, also a library or common meeting-room about 24ft. by 16ft. with two bay windows.

It will be noticed that the paying patients can on each side obtain access to the sun-shelters and winter gardens at each end of the façade, by means of a door of which they might be given a key; but if it were desired to keep them apart from the non-paying patients they could use their own shelter, or a portion of the grounds might be set apart for their special use. It will be observed that the rooms at the ends of the blocks are marked as sun rooms on each floor. But as there are two of these, one to each wing, their exact uses would depend on the medical superintendent, and they could be set apart for billiard-rooms, winter gardens, music-rooms, or for any form of recreation. The staircases at the extreme east and west of the façade give access to these shelters. They can also be reached by the central passenger lift, and thence through the gardens in fine weather. Lavatories for patients using the gardens are provided at the extremities of the façade.

First Floor.

The first and second floors of the south elevation are devoted to the eighty-eight non-paying patients. Twenty-two males and twenty-two females are accommodated on each floor. The northern portion contains the sitting-rooms for the men and women servants, which could be made into one large servants' hall if so desired. The eastern block of this northern block contains the housekeeper's bedroom, the assistant housekeeper's bedroom, and eight additional servants' bedrooms, including lavatories and bathrooms.

To the extreme east is the upper portion of the matron's quarters, reached by a private staircase from the ground floor. The west wing of the northern block contains the male servants' bedrooms, lavatories and bathrooms. The extreme western portion is devoted to the engineer's quarters, reached by a private staircase from the ground floor. These quarters consist of a sitting-room, living-room or kitchen, two bedrooms, bathroom and w.c. The connecting block contains a large serving-room 45ft. by 16ft., fitted up with service lights communicating with the ground-floor serving-room and a dining-hall 70ft by 45ft., covered with segmental panelled plaster ceiling. The dining-hall is thus placed in close proximity to both lifts and staircases, and is amply lighted on either side. This hall could be used also for entertainments, organ recitals, &c., and for this reason an organ gallery is placed at the the southern end, at the second-floor level, for patients whose rooms may be on the second floor and who are too weak to proceed to the body of the hall.

The southern portion of the inverted Y extends over the whole of the ground-floor rooms and shelters. Each wing contains twenty-two bedrooms 13ft. by 14ft. and 11ft. high. The male patients are to the west and the female to the east. These rooms are of the size and height as those given to the paying patients, but one room only is provided for each of them. A boot-room is provided on each side next to the central lounge and in proximity to the lifts, so that patients on arriving at this floor can change their boots before proceeding to their rooms. A room for the sister who would have charge of this floor is also provided, as well as an extra consulting-room for the medical officer, which can be used if required for minor pathological investigations.

The sanitary blocks are placed as shown, and in all cases are disconnected by cross-ventilated lobbies; it is considered, from those given in other establishments of the same nature, that they are sufficient.

The nurses' blocks, with ward kitchen, &c., are exactly similar to those on the ground floor. Cloakrooms for male and female patients are provided at the entrance to the dining-room, as it is found that confusion is thereby avoided.

One important point must be mentioned. A slightly projecting balcony is shown along the south front. It has been thought necessary to introduce this in a modified form in spite of our objection to balconies in a climate like that of England. There is perhaps no point of sanatorium construction about which so much divergence of opinion exists as that of balconies. In many sanatoria *covered* balconies are provided, in some instances running the whole length of the southern fronts, but such structures as usually constructed are, in our opinion, of somewhat doubtful advantage. It is true they afford a warm and efficient shelter for patients who are unable to stir far from the house, but they do so at the expense of the sunlight and air, which ought to be allowed to enter freely into the rooms. In the summer-time, especially in the warmer months, they are often unbearably hot, and prove enervating for the tuberculous patient, who needs fresh air and soft breezes rather than a hot sunshine.

It is to do away with the necessity for such *covered* balconies, whilst providing all that they supply in the shape of air-space, that these shelters and lounges have been provided to a greater or less extent on each floor.

In regard to the windows in the patients' rooms, three-quarters of the entire side of each room is arranged so that it can be folded back in compliance with the needs of the open-air treatment. We believe this is a novel arrangement, but one that should commend itself. It thus becomes necessary to protect the patients from any possibility of falling through the opening, and it is found that by projecting an *uncovered* balcony to a slight degree (about 2ft.) this can be effected without any diminution of the sun rays to the rooms beneath, adding a pleasing feature to the façade, as well as giving means of access for slight repairs or for the fixing of sun-blinds if they are required. A light trellis railing is placed along each balcony, and a similar one put between every room in order to ensure privacy to each patient.

Ample accommodation is provided for the recreation of patients on this floor—central lounge, day-rooms (with circular fronts) and sun rooms.

Second Floor.

The second floor is an exact duplicate of the first as far as the patients are concerned, and need not therefore be described. The connecting block of this floor contains the upper part of the dining-hall. At the north end is an organ gallery, already mentioned, and at the south a gallery for patients, above alluded to. The summer recreation-room in the centre of the north front would probably be better employed as a store-room for scenery or for extra chairs in connection with the hall.

Fire-escape stairs are provided to the patients' blocks in accordance with requirements for buildings of this nature.

Thus it will be seen that the keynote of the building arrangements has been to place the various administrative and medical departments towards the centre of the institution, the patients being located in the two wings facing nearly due south, whilst the quarters of the nurses, when they are off duty, are situated at the top of the building, where they will obtain ample fresh air and quietude. These quarters are reached with ease by the main staircase or passenger lifts.

Third Floor.

This floor is devoted entirely to accommodation for the nurses by means of three blocks, two containing bedrooms for the day nurses, and one to the north, with an east and west balcony, for the night nurses. The accommodation includes box-rooms, linen-rooms, lavatories and a large nurses' sitting-room facing due south.

Construction.

It has been assumed that a gently sloping site from north to south has been secured, and this has been taken at an inclination of about 6ft. from north to south. It was intended that fire-resisting construction should be used throughout, and one of the best and simplest kinds is that of steel joists and coke-breeze concrete. Teak or oak floor-boards in narrow widths can be nailed direct to this, and kept thoroughly clean by a periodical treatment of wax and turpentine. Parquet-flooring on ordinary floor-boards might be used instead, and smooth plain linoleum is recommended by some in preference to any of these as being cheap and less noisy. Indeed, as damp dusters were held to be the proper means of cleansing floors, any polished surface seems impossible. Hollow spaces of all kinds should be avoided, as they harbour dirt and propagate disease.

The floors of the sanitary wings are formed of steel joists and concrete, and would be covered with mosaic or terrazzo-flooring laid to a slight slope so that they could be thoroughly flushed down periodically. The walls would be constructed of good, hard, well-burnt bricks, rough-cast on the outside. The sitting-rooms might be lined to a height of 5ft. with glazed hanging tiles, allowing frequent cleansing. Above this the wall would be covered with some hard non-absorbent cement, such as Keen's or plaster-of-Paris, which could be periodically distempered or painted. Varnishing is a mistake, as moisture condenses on it.

No mouldings, protecting cornices, or skirtings would be used, and the junction of the wall with the ceiling and the floor would be made with rounded corners. The ceilings would also be treated in this hard plaster distempered. The sanitary blocks would have their walls lined throughout with tiles to a height of 5ft., with rounded angles at top and bottom.

As to the window openings, we designed a window front to each room which can be folded back or taken out if desired. The window-frame should be made of teak or oak, no mouldings being allowed, but only rounded corners. These windows can be arranged to swing round into the corners, so that three-quarters of the outer wall of the room can be thrown completely open.

The roofs are covered with red tiles. For many reasons these are better than slates, as they render the rooms underneath of a more equable temperature in summer and winter. In order, however, to effect this in a thoroughly trustworthy manner, the roofs would be constructed of steel rafters, with concrete between, and having mortar in which the tiles would be embedded solid without nails.

The furniture of the patients' rooms must be simple in character, so as to permit frequent disinfecting, cleaning and renewal if needed. An iron bedstead, with a "Lawson Tait" wire-wove mattress and the usual complement of sheets and blankets, is all that would be necessary in the shape of bedding. A simple iron washstand enclosed as little as possible, with enamelled iron basin, jug and crockery, a chest of drawers, a chair or two and a movable bookcase, and a rug or two on the floor, would complete what was necessary. Some deviations from the routine furniture would no doubt be permitted in individual cases, especially when dealing with paying patients.

(Mr. Fletcher concluded with the sanitation of the building, such as the disposal of sewage, the ventilation, the various forms of fittings, the modes of lighting, the water supply and other details.)

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 9. *East Harding Street, E.C.*

Bridlington.—For the erection of an isolation hospital in Bempton Lane, for the Corporation :—

E. Corner	£4, 00	0
Sampson & Siddall	3,587	6
A. Gardam	3,576	0
Smallwood & Shaw	3,570	0
A. A. Booth	3,536	0
J. H. Hudson	3,292	12
F. Postill	3,284	0
E. E. Yeomans	3,131	0
J. Sawdon	2,999	0
G. Storr & Sons*	2,910	0

* Accepted. [All of Bridlington.]

Burton-upon-Trent.—For the erection of new post office at Burton-on-Trent, for H.M. Office of Works, &c. :—

				A
D. Paxter & Sons	£10,565	0	0	£.6
F. L. Jones	9,500	0	0	1 0
G. Hodges	9,244	0	0	50
T. Lowe & Sons	9,015	0	0	75
G. H. Adams	8,972	0	0	92
H. Vickers & Son	8,800	0	0	100
J. & J. Warner	8,771	16	5	70
R. Kershaw	8,750	0	0	120

A.—Old materials.

Chadwell Heath.—For the erection of eight houses Grove Road, Chadwell Heath, Essex, for Messrs. T. & A, Goodey. Messrs. Verlyck & Dunn, architects, Adelaide Chambers, Ilford, E. :—

C. North	£3,480	0
F. Willmott	2,750	0
F. Gowen	2,720	0
A. Symes	2,400	0
A. H. Lovett	2,280	0
R. Stroud	2,239	12
M. Pollhill	2,176	0
A. Taylor	2,023	0
J. Gregory	2,000	0
Thompson & Co.*	1 9:0	0

* Accepted.

Derby.—For the erection of Holy Trinity Church, London Road for the Vicar and Churchwardens. Mr. Charles E. Hewit, architect, 118, Queen's Road, Brighton :—

		A
Walker & Slater*	£9 400	£8,000
Ford & Co.	9,200	7,900
R. Weston	9,197	7,567

* Accepted subject to confirmation.

A.—Including lower portion of tower only.

Keston (Kent).—For additions, alterations, &c, at Woodside, for Mr. A. C. Norman, J.P. Messrs. Swan & Norman, architects, 8 Clifford's Inn, Temple Bar. Quantities by architects :—

Crossley & Son	£1,475	Johnson & Co.	£1,300
F. G. Minter	1,423	Arnaud & Son	1,248
Smith & Sons	1,393	F. P. Duthoit*	1,161
Kiddle & Son	1,333		

* Accepted.

London.—For drainage and sanitary work, &c., at Stanley Street School, for the London School Board. Mr. T. J. Bailey, Board's architect :—

Martin, Wells & Co, Ltd.	£3,140	0	0
Ashby & Horner	3,100	0	0
Johnson & Co.	3,045	0	0
G. Parker	2,934	0	0
R. P. Beattie	2,933	3	7
J. & C. Bowyer	2,879	0	0
W. V. Goad	2,825	0	0
H. Leney & Son	2,720	0	0
W. Downs*	2,567	0	0
J. W. Falkner & Sons	1,997	0	0

* Recommended for acceptance.

London.—For the erection of the Ashburnham (Chelsea) School, for the London School Board. Mr. T. J. Bailey, Board's architect :—

		A
Martin, Wells & Co, Ltd	£11,814	£200
General Builders, Ltd.	10,595	103
Patman & Fotheringham, Ltd	10,303	175
F. Gough & Co.	10,273	140
Treasure & Son	10,177	138
Leslie & Co., Ltd.	10,167	151
W. King & Son	10,157	1 1
Spencer, Santo & Co., Ltd.	9,995	180
E. Triggs	£9,940	£177
W. Johnson & Co., Ltd.	9,922	170
J. & M. Patrick	9,583	134
Stimpson & Co.*	9,500	164

* Recommended for acceptance.

A.—If walls of classrooms and halls are plastered add.

London.—For enlargements and improvements at Lollard Street School, for the London School Board. Mr. T. J. Bailey, Board's architect :—

W. J. Mitchell & Son	£23,049
W. Johnson & Co, Ltd.	22,780
Lathey Brothers	22,700
F. & H. F. Higgs	22,631
Martin, Wells & Co., Ltd.	22,601
Holliday & Greenwood, Ltd.	22,445
J. Appleby & Sons	22,169
E. Lawrance & Sons	22,000
W. Downs	21,760
J. & M. Patrick	21,543
W. Smith & Son	21,453
J. Marsland & Sons	21,225
Holloway Brothers, Ltd.	20,943
J. & C. Bowyer	20,732
J. Smith & Sons, Ltd.	20,620
J. Garrett & Son	20,496
G. E. Wallis & Sons	20,465
J. Greenwood, Ltd.*	20,315

* Recommended for acceptance.

London.—For adaptation for various purposes of building in Old Kent Road (to be known as the Townsend Street School for the Deaf), for the London School Board. Mr. T. J. Bailey, Board's architect :—

W. Downs	£4,887
J. & C. Bowyer	4 160
T. Hooper & Son	3,965
E. P. Bulled & Co.*	3,885

Lathey Brothers, 17½ per cent. above schedule; Johnson & Co., 10 per cent.; J. Marsland & Sons, 5 per cent.

* Recommended for accepted.

London.—For the erection of sanitary annexes to patients' blocks at the Caterham Asylum, for the Metropolitan Asylums Board :—

T. Vaughan, Caterham Valley	£4,105	0	0
Foster Brothers, Norwood Junction, S.E.	3,992	0	0
G. E. Wallis & Sons, Maidstone	3,968	0	0
J. & C. Bowyer, Upper Norwood, S.E.	3,836	0	0
T. Cole, Barnsbury, N.	3,513	11	5
Gardner & Hazell,* 84, Canonbury Road, Islington, N.	3,480	0	0

* Accepted. [Surveyor's estimate £2,8 0.]

London.—For the erection of Beaufort House (Chelsea) School, for the London School Board. Mr. T. J. Bailey, Board's architect :—

Leslie & Co. Ltd.	£20,142	W. King & Son	£18,620
J. Appleby & Sons	19,570	C. F. Kearley	18,618
McCormick & Sons	19,545	J. Marsland & Sons	18,551
J. Longley & Co.	19,536	W. Johnson & Co., Ltd.	18,532
Treasure & Son	19,184	F. & H. F. Higgs	18,398
Holloway Brothers, London, Ltd.	18,805	J. & C. Bowyer	18,295
Martin, Wells & Co., Ltd.	18,747	E. Lawrance & Sons	18,289
Macey & Sons, Ltd.	18,700	W. Downs	18,173
Lathey Brothers	18,692	J. & M. Patrick	17,918
J. Garrett & Son	18,638	Stimpson & Co.*	17,900

* Recommended for accceptance.

London.—For the erection of laundrymaids' quarters at the Caterham Asylum, for the Metropolitan Asylums Board :—

W. Harman, Caterham	£3,108	0	0
T. Vaughan, Caterham Valley	2,864	0	0
Foster Brothers, Norwood Junction, S.E.	2,795	0	0
G. E. Wallis & Sons, Maidstone	2,768	0	0
J. & C. Bowyer, Upper Norwood, S.E.	2,768	0	0
T. Cole,* 125, Offord Road, Barnsbury, N.	2,475	17	3

* Accepted. [Engineer's revised estimate, £2,600.]

London.—For the erection of Cromer Street School, for the London School Board. Mr. T. J. Bailey, Board's architect :—

C. Miskin & Sons	£13,779	0	0
W. Gregar & Son	13,255	0	0
J. Grover & Son	13,216	0	0
T. L. Green	13,177	0	0
L. H. & R. Roberts	13,156	0	0
F. & H. F. Higgs	13,150	0	0
W. M. Dabbs	13,126	0	0
C. Cox	13,108	0	0
G. S. S. Williams & Son	13,068	0	0
Macey & Sons, Ltd.	13,058	0	0
F. & F. J. Wood	13,042	0	0
J. Simpson & Son	13,023	0	0
A. Porter	12,982	12	8
McCormick & Sons	12,789	0	0
E. Lawrance & Sons	12,764	0	0
Patman & Fotheringham, Ltd.	12,713	0	0
Treasure & Son	12,460	0	0
J. Chessum & Son*	12,382	10	0

* Recommended for acceptance.

(Continued on p. xiv.)

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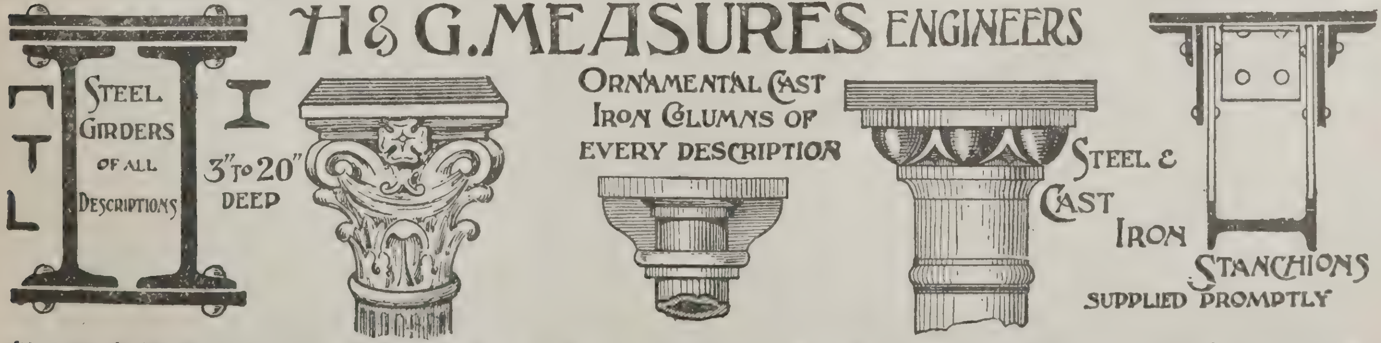

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	BUILDING:		
April 16	Leeds—Cement	Sewerage Committee	City Engineer, Leeds.
„ 16	Bargoed, Wales—Converting Houses to Business Premises	——	D. S. Jones, Grocer, Bargoed
„ 16	Ferryhill, Durham—Branch Store	Bishop Auckland Co-op. Soc., Ltd.	F. H. Livesay, Architect, Bishop Auckland.
„ 16	Lowestoft—School Chapel	——	E. E. Smith, 145 Victoria Road North, Southsea.
„ 16	Pengam, Wales—Alterations, &c., to School	Glamorgan County Governing Body.	W. E. R. Allen, Clerk, County Offices, Westgate Street, Cardiff.
„ 16	Hythe, Lancs—Lime, Cement, &c.	Corporation	C. Jones, Borough Surveyor, Bank Chambers, Hythe, Kent.
„ 17	Armley, Leeds—Alterations, &c., to Club	Conservative Club	Beckwith & Webster, 2 Basinghall Square, Leeds.
„ 17	Ashburton—Additions to School	Grammar School Governors	R. E. Tucker, Clerk to Governors, Ashburton.
„ 17	Llanelly—Chapel	——	D. L. Jones, 12 West End, Llanelly.
„ 17	Epsom—Cement, Lime, &c.	Urban District Council	Surveyor, Bromley Hurst, Church Street, Epsom.
„ 17	Burneside, near Kendal—Mill	J. Cropper & Co., Ltd.	J. Hutton, Architect, Kendal.
„ 17	Convoy, co. Donegal—Church	——	J. M'Intyre, Architect, Letterkenny.
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„ 18	Macclesfield—Annexe Superstructure	——	H. Bewick, County Architect, Newgate Street, Chester.
„ 18	Abertridwr, Wales—House, Stable, &c.	——	Dr. Burke, Abertridwr.
„ 18	King's Lynn—Repairs, &c., at Inn	Municipal Charity Trustees	H. Tilson, 16 Railway Road, King's Lynn.
„ 18	Limerick—Alterations, &c., to Premises	Ulster Bank, Ltd.	W. Barrington, Clare Chambers, Limerick.
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„ 18	Northwich—Baths Extension and Repair	Urban District Council	J. A. Cowley, Clerk, Council Offices, Northwich.
„ 18	Woodhall Spa, Lincs—Chancel, &c., of Church	——	Boreham & Morton, 24 John Street, Sunderland.
„ 20	Alnwick—Villa	C. Percy	W. T. Spence, Architect, Ashmount, Shotley Bridge.
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„ 20	Waun-Llwyd, Wales—Twenty-one Houses	Park Building Club	Park Hotel, near Victoria Station, Mon.
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„ 20	Bristol—Cement, Lime, &c.	——	W. W. Squire, Docks Engineer, Cumberland Basin, Bristol.
„ 20	Rowley Regis—School	School Board	Meredith & Pritchard, Architects, Bank Buildings, Kidderminster.
„ 20	London, N.—Underground Conveniences	Islington Borough Council	J. P. Barber, Borough Engineer, Town Hall, Upper Street, N.
„ 20	Pontypool—Church and School	——	Swash & Bain, Architects, Midland Bank Chbrs., Newport, Mon.
„ 20	Swindon—Engine-House, Boiler-House, &c.	Corporation	Borough Surveyor, Town Hall, Swindon.
„ 20	Tamworth—Infirmary	Guardians	J. W. Godderidge, 4 Bolebridge Street, Tamworth.
„ 20	Corsett—House	J. Pierson	T. H. Murray, architect, Consett, co. Durham.
„ 21	Edinburgh—Fireclay Bricks and Retorts, &c.	Gas Commissioners	Chief Engineer, Gasworks, New Street, Edinburgh.
„ 21	Manor Park, E.—Sorting Office	Commnrs. of H.M. Works, &c.	J. Wager, H.M. Office of Works, &c., Storey's Gate, S.W.
„ 21	Walham Green—Sorting Office	Commnrs. of H.M. Works, &c.	J. Wager, H.M. Office of Works, &c., Storey's Gate, S.W.
„ 21	Kentish Town, N.W.—Sorting Office	Commnrs. of H.M. Works, &c.	J. Wager, H.M. Office of Works, &c., Storey's Gate, S.W.
„ 21	Ebbw Vale, Wales—Schoolroom, &c.	——	R. L. Roberts, Architect, Abercarn.
„ 21	Hull—School Addition	School Board	D. J. O'Donaghue, Clerk, Offices, Albion Street, Hull.
„ 21	Manchester—Goods Shed	Lancs and Yorks Ry. Co.	Engineer, Hunt's Bank, Manchester.
„ 21	Merthyr Tydfil—Chapel, School, &c.	Morlais Baptist Church	E. Aubrey, 22 The Avenue, Merthyr.
„ 21	Plymouth—Police and Fire Station	—	J. Paton, Borough Engineer, Municipal Offices, Plymouth.
„ 21	Wakefield—Dwellings, &c.	Brotherton & Co., Ltd.	F. Simpson & C. W. Richardson, Joint Architects, Southgate Chambers, Southgate, Wakefield.
„ 21	Glasgow—Lime, Cement, &c.	Corporation	J. Young, 88 Renfield Street, Glasgow.
„ 21	Headcorn, Kent—Hall	Loyal Weald of Kent Oddfellows Lodge.	Jeffery & Lacey, 13 North Street, Ashford.
„ 22	Blackpool—Shelters and Bandstands	Corporation	J. S. Brodie, Borough Surveyor, Town Hall, Blackpool.
„ 22	London, S.W.—Disinfector House, &c.	Metropolitan Asylums Board	A. & C. Harston, 15 Leadenhall Street, E.C.
„ 23	Baildon, Yorks—House	——	Walker & Collinson, Architects, Swan Arcade, Bradford.
„ 24	Halifax—Four Shops, Warehouse, Stable, &c.	——	J. F. Walsh & G. Nicholas, Architects, Museum Chambers, Harrison Road, Halifax.
„ 24	Windermere—Addition to Hospital Buildings	Urban District Council	R. Walker, Architect, Windermere.
„ 24	Walsall—Bricks, Cement, &c.	Rural District Council	F. W. Mager, District Surveyor, Council Offices, Aldridge, Walsall.
„ 25	Eastbourne—Fire Station	Corporation	P. A. Robson, 9 Bridge Street, Westminster, S.W.
„ 25	Pontrhyfen, Wales—Chapel	——	G. P. Davies, Architect, Port Talbot.
	ENGINEERING:		
April 16	Manchester—Motors	Electricity Committee	F. E. Hughes, Secretary, Electricity Department, Town Hall, Manchester.
„ 16	Barrow-in-Furness—Waterworks	Corporation	A. H. Strongitharm, Engineer, Ramsden Sq., Barrow-in-Furness
„ 17	Croydon—Destructor Furnaces, &c.	Town Council	Deputy Borough Engineer, Town Hall, Croydon.
„ 17	Dundee—Thirty Railway Wagons	Gas Commissioners	A. Yuill, Gas Engineer, Dundee.
„ 17	Aston Manor, Birmingham—Free Wiring and Motors	Urban District Council	R. P. Wilson, 66 Victoria Street, Westminster.
„ 18	Colne, Lancs—Coke Conveyor	Gas Committee	F. Thorpe, Engineer, Gasworks, Colne.
„ 18	Batley—Eight Electrical Tramcars	Corporation	Lacey, Clirehugh & Sillar, 2 Queen Anne's Gate, Westminster.
„ 18	Darlington—Overhead Equipment, &c.	Corporation	H. G. Steavenson, Town Clerk, Darlington.
„ 18	Eccles, Lancs—Free Wiring	Corporation	H. W. Angus, Borough Electrical Engineer, Electricity Works, Cawdor Street, Patricroft.
„ 18	Eccles, Lancs—Electrical Plant	Corporation	H. W. Angus, Borough Electrical Engineer, Electricity Works, Cawdor Street, Patricroft.
„ 18	Glastonbury—Incandescent Lamps	Gas Committee	D. E. Garlick, Manager, Gasworks, Glastonbury.
„ 18	Morpeth—Water Mains	——	J. A. Bean, County Surveyor, The Moot Hall, Newcastle-on-Tyne.
„ 18	Wakefield—Boiler, Condenser &c.	Corporation	C. M. Shaw, City Electrical Engineer, Electricity Works, Wakefield.
„ 18	Manchester—Special Track Work	Tramways Committee	J. M'Elroy, 55 Piccadilly, Manchester.
„ 20	Bath—Steam Dynamo, Boiler, &c	Corporation	City Electrical Engineer, 7 Dorchester Street, Bath.
„ 20	Ilford—Electric Fire Alarm Telephones	Urban District Council	H. Shaw, Engineer, Council Offices, Ilford.
„ 20	Knutsford—Gasholder	Light and Water Co.	T. Newbigging & Son, 5 Norfolk Street, Manchester.
„ 20	Kildare, Ireland—Electric Lighting of Town	Naas No. 1 Rural District Council	F. Bergin, 34 Westmoreland Street, Dublin.
„ 20	Bedford—Water-tube Boiler	Electricity Committee	R. W. L. Phillips, Borough Electrical Engineer, Cauldwell Road, Bedford.
„ 21	Gravelly Hill, near Birmingham—Gas and Water Mains	Aston Union Guardians	C. Whitwell & Son, 23 Temple Row, Birmingham.
„ 21	London, N.W.—Surface Gondenser	St. Pancras Borough Council	Electricity Department, 57 Pratt Street, N.W.
„ 21	Sandbank, Scotland—Electric Light Installation	Cowal District Committee	J. Andrew, Engineer, Burgh Buildings, Dunoon.
„ 21	Bridlington—Electric Lighting Plant	Corporation	F. H. Medhurst, Page & Lloyd, 13 Victoria Street, Westminster, S.W.
„ 21	Limerick—Wiring	——	J. Enright, 202, Hollan's Road, Kensington, S.W.
„ 21	Maidenhead—Dynamo, &c.	Corporation	Burstall & Monkhouse, 14 Old Queen Street, Westminster, S.W.
„ 21	Calcutta—Sewage Pumping Plant	Corporation	Chief Engineer, 2 Municipal Office Street, Calcutta.
„ 21	Daventry—Water Supply Works	Borough Council	Borough Surveyor, Moot Hall, Daventry.
„ 22	New Cross, S.E.—Fire Main and Hydrants	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
„ 22	Hastings—Water Mains	Guardians	A. W. Jeffery & Son, 5 Havelock Road, Hastings.
„ 22	London, N.—Fire Hydrants	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
„ 23	Southampton—Boiler	Guardians	D. P. Gwillim, Clerk, St. Mary Street, Southampton.
„ 23	London, S.W.—Steamboat	Lords Commissioners of the Admiralty.	Secretary to the Admiralty, Ship Branch, Whitehall, S.W.
„ 24	Londonderry—Electrical Plant	Corporation	Preece & Carden, 8 Queen Anne's Gate, Westminster, S.W.
„ 24	Newcastle-on-Tyne—Rebuilding, &c. Bridges	Northumberland County Council	J. A. Bean, County Surveyor, The Moot Hall, Newcastle-on-Tyne.
	FURNITURE:		
April 25	Styal, Cheshire—Furniture, &c.	Chorlton Union Guardians	D. S. Bloomfield, Clerk, Union Offices, All Saints', Manchester.
	IRON AND STEEL:		
April 16	Leeds—Castings	Sewerage Committee	City Engineer, Leeds.
„ 16	Axbridge—Pipes	Rural District Council	A. Powell, 3 Unity Street, College Green, Bristol.
„ 16	Hythe, Lancs—Stores	Corporation	C. Jones, Borough Surveyor, Bank Chambers, Hythe, Kent.
„ 16	India Office, S.W.—Rails, &c.	——	Director-General of Stores, India Office, Whitehall, S.W.
„ 16	London, E.C.—Stores	Great Indian Peninsular Rly. Co.	J. T. Berry, Secretary, 48 Copthall Avenue, E.C.
„ 16	London, E.C.—Stores	Mersey Railway Co.	G. H. Langham, Secretary, Worcester House, Walbrook, E.C.
„ 17	Epsom—Stores	Urban District Council	Surveyor, Bromley Hurst, Church Street, Epsom.

Complete List of Contracts Open *—continued.*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	IRON AND STEEL—*cont.*		
April 17	Halifax—Stores	Gasworks Committee	T. Holgate, Engineer, Gasworks, Halifax.
" 18	Bingley, Yorks—Castings	Urban District Council	H. Bottomley, Surveyor, Town Hall, Bingley.
" 18	Leeds—Steelwork	Gas Committee —	R. H. Townsley, General Manager, Gas Offices, Municipal Buildings, Leeds.
" 18	Morley—Meters, Iron, &c.	Gas Committee	H. J. Hemingway, Gas Office, Town Hall, Morley.
" 18	Buxton—Stores	Urban District Council	W. H. Grieves, Town Surveyor, Buxton.
" 20	Dublin—Cast-iron Chairs	Gt. Northern Rly. Co. (Ireland)	T. Morrison. Secretary, Amiens Street Terminus, Dublin.
" 20	Leeds—Pipes, &c.	Gas Committee	R. H. Townsley, General Manager, Gas Offices, Municipal Buildings, Leeds.
" 20	Falkirk—Ironmongery, Smith and Founder Work, &c.	Town Council	T. M'Kee, Inspector's Office, Burgh Buildings, Falkirk.
" 20	Bristol—Stores	———	W. W. Squire, Docks Engineer, Cumberland Basin, Bristol.
" 21	Gravelly Hill, near Birmingham—Gas Fittings	Aston Union Guardians	C. Whitwell & Son, 23 Temple Row, Birmingham.
" 21	London, E.C.—Axles, &c.	Bengal-Nagpur Rly. Co., Ltd.	Secretary, 132 Gresham House, Old Broad Street, E.C.
" 21	Dublin—Railway Stores	Dublin, Wicklow and Wexford Rly. Co.	M. F. Keogh, Secretary, Westland Row, Dublin.
" 21	India Office, S.W.—Railway Stores	———	Director-General of Stores, India Office, Whitehall, S.W.
" 21	Glasgow—Stores	Corporation	J. Young, 88 Renfield Street, Glasgow.
" 21	Edinburgh—Castings, &c.	Gas Commissioners	Chief Engineer, Gasworks, New Street, Edinburgh.
" 22	Amsterdam—Bridgework, Wagons, &c.	Netherlands Minister of Colonies	Mart. Nyhoff, 18 Nobelstraat, The Hague.
" 23	Bradford—Ironwork for Ornamental Gates and Fencing	Corporation	Town Clerk, Bradford.
" 23	Torquay—Gas Pipes	Gas Committee	F. Chalmers, Engineer, St. Marychurch Gasworks, Torquay.
" 24	Walsall—Castings	Rural District Council	F. W. Mager, District Surveyor, Council Offices, Aldridge, Walsall.
	PAINTING AND PLUMBING:		
April 16	Hythe, Kent—Lead, Oils, Colours, &c.	Corporation	C. Jones, Borough Surveyor, Bank Chambers, Hythe, Kent.
" 17	Halifax—Oils, Paints, &c.	Gasworks Committee	T. Holgate, Engineer, Gasworks, Halifax.
" 17	Barrow-in-Furness—Painting, &c, Town Hall	Corporation	Borough Engineer, Town Hall, Barrow-in-Furness.
" 17	Preston—Painting, &c.	Corporation	Borough Engineer, Town Hall, Preston.
" 18	Egremont, Cheshire—Painting, &c.	Wallasey Urban District Council	Ferry Manager Seacombe Ferry, Egremont.
" 20	Falkirk—Paints, Oils, &c.	Town Council	T. M'Kee, Inspector's Office, Burgh Buildings, Falkirk.
" 20	Tolworth—Whitewashing, Painting, &c., at Hospital	———	Miss Freeman, Superintendent, Hospital, Red Lion Lane, Tolworth.
" 21	Edinburgh—Oil and Paints	Gas Commissioners	Chief Engineer, Gasworks, New Street, Edinburgh.
" 21	Glasgow—Brushes, Plumbers' Materials, Oils, Paints, &c.	Corporation	J. Young, 88 Renfield Street, Glasgow.
" 28	London, W.C.—Painting, Repairs, &c.	St. Giles and St. George Guardians, Bloomsbury.	J. Appleton, 57 Broad Street, Bloomsbury, W.C.
" 30	Devonport—Lead Tube, Paints, Oils, &c.	Gas Committee	S. E. Stevenson, Engineer, Gasworks, Devonport.
	ROADS AND CARTAGE:		
April 16	Oakham—Materials, &c.	Rutland County Council	B. A. Adam, Clerk, Oakham.
" 16	Woolston, Hants—Private Street Works	Itchen U.D.C.	T. A. Collingwood, Surveyor, Council Offices, Portsmouth Road, Woolston, Hants.
" 17	Epsom—Materials, &c.	Urban District Council	Surveyor, Bromley Hurst, Church Street, Epsom.
" 17	Preston, Lancs—Levelling, Paving, &c.	Corporation	Borough Surveyor, Town Hall, Preston.
" 17	Teddington—Materials	Urban District Council	M. Hainsworth Surveyor, Council Offices, Teddington.
" 18	Southborough, Kent—Materials	Urban District Council	P. Hanmer, Clerk, Council Offices, Southborough.
" 18	Spennymoor—Paving, &c.	Urban District Council	C. R. Spencer, Council's Surveyor, Silver Street, Spennymoor.
" 18	Morpeth—Asphalting &c., at Asylum	Committee of Visitors	J. A. Bean, County Surveyor, Moot Hall, Newcastle-on-Tyne.
" 18	Hunslet, Leeds—Road Materials	Rural District Council	W. B. Pindar, Clerk, Glasshouse Street, Hunslet.
" 18	Leighton Buzzard—Materials	Wing R.D.C.	M. Guerney, Surveyor, Leighton Buzzard.
" 18	Warminster—Flints, &c.	Rural District Council	R. H. Bourne, Surveyor, Crockerton, Warminster.
" 18	Buxton—Materials	Urban District Council	W. H. Grieves, Town Surveyor, Buxton.
" 20	Falkirk—Materials	Town Council	T. M'Kee, Inspector's Office, Burgh Buildings Falkirk.
" 20	Annan, Scotland—Paving	Town Council	Burgh Surveyor, Town Hall, Annan.
" 20	London, N.—Wood Paving, &c.	Hornsey U.D.C.	E. J. Lovegrove, Engineer, Southwood Lane, Highgate, N
" 20	London, S W.—Paving Work	Westminster City Council	Works Dept., Westminster City Hall, Charing Cross Road, W.C.
" 20	Sunbury-on-Thames—Kerbing and Tar Paving	Urban District Council	H. F. Coales, Surveyor, Council Offices, Sunbury-on-Thames.
" 21	Glasgow Materials	Corporation	J. Young, 88 Renfield Street, Glasgow.
" 21	Tottenham—Making-up Roads	Urban District Council	W. H. Prescott, 712 High Road, Tottenham.
" 22	Ramsgate—Street Works	Corporation	Borough Engineer, Albion House, Ramsgate.
" 22	Swinton, Lancs—Materials	Urban District Council	W. T. Postlethwaite, Clerk, Council Offices, Swinton.
" 23	London, W.—Granite Spalls	Kensington Gardens	J. H. Rutherglen, Clerk, Marloes Road, Kensington.
" 24	Walsall—Broken Slag, Granite, &c.	Rural District Council	F. W. Mager, District Surveyor, Council Offices Adridge, Walsall.
" 25	Bradford—Road Metal	Corporation	J. H. Cox, City Surveyor, Town Hall, Bradford.
" 27	Hanwell, W.—Sewering, Levelling Paving, &c.	Urban District Council	S. W. Barnes, Surveyor, Council Offices, Church Road West, Hanwell, W.
" 30	Scarborough—Approach Road	Town Council	E. T. Beard & H. W. Smith, Engineers, Town Hall, Scarborough.
" 30	Devonport—Cartage, &c.	Gas Committee	S. E. Stevenson, Engineer, Gasworks, Devonport.
	SANITARY:		
April 16	Leeds—Earthenware Pipes	Sewerage Committee	City Engineer, Leeds.
" 16	Leeds—Lime for Sewage Works	Sewerage Committee	City Engineer, Leeds.
" 16	Tamworth—Sewers, &c.	Rural District Council	H. J. Clarson, 22 Church Street, Tamworth.
" 16	Hythe, Kent—Disinfectants, Lime, &c.	Corporation	C. Jones, Borough Surveyor, Bank Chambers, Hythe, Kent.
" 17	Epsom—Disinfectants, Lime Pipes, &c.	Urban District Council	Surveyor, Bromley Hurst, Church Street, Epsom.
" 18	Buxton—Lime, Drainage Materials, &c.	Urban District Council	W. H. Grieves, Town Surveyor, Buxton.
" 18	Chirk—Sewerage Works	Rural District Council	E. Bremner, Smith & Bremner, 10 Warwick Court, W.C.
" 19	Measham, Atherstone—Scavenging	Parish Council	C. Hart, Clerk, Measham, Atherstone.
" 20	Falkirk—Pipes Disinfectants, &c.	Town Council	T. M'Kee, Inspector's Office, Burgh Buildings, Falkirk.
" 20	London, N.—Side Entrances to Sewers, &c.	Hornsey U.D C.	E. J. Lovegrove, Engineer Southwood Lane, Highgate, N.
" 20	Bacup, Lancs—Sewer	Corporation	W. H. Elce, Borough Surveyor, Bacup.
" 20	Newhaven, Sussex—Sewer	Urban District Council	F. J. Rayner, Council's Surveyor, Newhaven, Sussex.
" 21	Edinburgh—Lime, Pipes, &c.	Gas Commissioners	Chief Engineer, Gasworks, New Street. Edinburgh.
" 21	Colwyn Bay—Sewerage and Sewage-Disposa Works	Urban District Council	Pritchard, Green & Co., 37 Waterloo Street, Birmingham.
" 22	Tarporley, Cheshire—Sewerage Works	Urban District Council	B. Latham Parliament Mansions, Victoria Street, Westminster.
" 23	Balfron, Scotland—Drainage Works	County Council	A. Forbes, 146 Buchanan Street, Glasgow.
" 24	Walsall—Stoneware Goods and Disinfectants	Rural District Council	F. W. Mager, District Surveyor Council Offices, Aldridge, Walsall.
" 25	Salisbury · Disinfectants	General Purposes Committee	W. C Powning, Town Clerk, Municipal Offices, Salisbury.
" 27	Manchester Drain Covers	Corporation	Secretary, Rivers Department, Town Hall, Manchester.
" 27	Stanley, Durham—Scavenging	Urban District Council	J. T. Coulson, Inspector of Nuisances, Council Offices, Stanley.
	TIMBER:		
April 16	Hythe, Kent—Timber	Corporation	C. Jones, Borough Surveyor Bank Chambers, Hythe.
" 20	Bristol—Timber	———	W. W. Squire, Docks Engineer, Cumberland Basin, Bristol.
" 21	Edinburgh—Timber	Gas Commissioners	Chief Engineer, Gasworks, New Street, Edinburgh.
" 27	West Hartlepool—Sleeper Blocks, &c.	North Eastern Railway Co.	Secretary, York.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &C.	BY WHOM ADVERTISED.
April 30	Fenton, Staffs—Library	£60, £30.	£1 1s.	S. A. Goodall, Surveyor, Town Hall, Fenton, Staffs.
" 30	Sunderland—Alterations to Hall	£100, £50, £25.	£5.	J. W. Moncur, Borough Engineer, Town Hall, Sunderland.
May 13	Stockton-on-Tees—Girls' High School	£25, £15 10s.	———	C. J. Archer, 77 High Street, Stockton-on-Tees.
" 30	Gillingham, Kent—Public Swimming & Slipper Baths	£20, £10, £5.	———	F. C. Boucher, Clerk to Gillingham U.D.C., New Brompton, Kent.
June 30	Blackpool—Picture Poster	£100, £50, £30, £20.	———	C. Noden, Corporation Advertising Manager, Town Hall, Blackpool.
No date	Swansea—Church Hall	———	———	L. Daniel, 6 St. James's Gardens, Swansea.

TENDERS (*cont. from* p. xi.)

London.—For works at Dalgleish Street School, for the London School Board. Mr. T. J. Bailey, Board's architect :—

F. & H. F. Higgs ..	£7,965	J. Chessum & Sons..	£7,045
G. Munday & Sons..	7,939	McCormick & Sons.	6,991
Perry & Co.	7,718	E. P. Bulled & Co. ..	6,859
Holliday & Greenwood, Ltd.	7,712	Johnson & Co.	6,813
W. Gregar & Son ..	7,684	G. E. Wallis & Sons.	6,666
E. Lawrence & Sons	7,517	J. & C. Bowyer ..	6,593
J. Longley & Co. ..	7,517	J. Greenwood, Ltd...	6,388
Treasure & Son ..	7,125	T. D. Leng*	6,379

* Recommended for acceptance.

London, E.—For the adaptation of ground floor of back building at College Lane School, Homerton, for the London School Board. Mr. T. J. Bailey, Board's architect :—

Marchant & Hirst ..	£1,976	E. Lawrence & Sons	£1,487
G. Barker	1,938	G. S. S. Williams & Sons	1,410
H. Groves	1,900	J. Stewart*	1,360
Stevens Brothers ..	1,834		
Belcher & Co., Ltd. .	1,498		

* Recommended for acceptance.

London, W.—For pulling down and re-erecting 372 and 374, Oxford Street, 2, 4 and 6, James Street, and portions of 8, James Street and 14 and 15, Gee's Court, for Mr. J. S. Atkinson. Messrs. Willey & Gale, architects. Quantities by Mr. Alfred Howard, 225, Strand, W.C. :—

Thompson & Beveridge	£12,698	Lawrence	£11,499
Martin, Wells & Co.	11,967	Kingerlee & Sons ..	11,397
Carmichael ..	11,810	Hibberd	11,275
Patman & Fotheringham	11,523	Holliday & Greenwood	11,147
		Smith & Sons ..	11,111

London, N.—For the erection of a house in Hendon Avenue, Finchley, Church End, for Mr. H. Browning. Quantities by Messrs. Bennett & Richardson, Crouch End, Finchley. Messrs. Whittaker & Bradburn, architects and surveyors, 19, King Edward Street, Macclesfield :—

E. Tribe	£1,786	0	0
H. Parkinson	1,729	18	7
H. Holloway	1,643	0	0
H. M. Dove ..	1,625	0	0
E. Kerry & Son	1,577	0	0
T. Gough & Co.	1,474	0	0
Godson & Sons	1,452	0	0
Matlock Brothers	1,425	0	0
Coulsell Brothers	1,413	0	0
C. R. Price	1,377	0	0
Jesse Phoenix*	1,370	0	0

* Accepted.

Menston (Yorks)—For the construction of a new storage reservoir in the parish of Menston for the Menston waterworks, for the Wharfedale Rural District Council. Mr. E. J. Silcock, M.I.C.E., engineer, 10, Park Row, Leeds :

J. Barnes, Birmingham	£7,187
V. Balmforth, Elland	5,716
E. Kellett, Bradford	5,233
O. Lister, Ilkley	5,213
Ward & Tetley, Bradford	5,116
Jones & Co., Leeds	4,987
A. Dickenson, Leeds	4,921
R. W. Barker, Harrogate	4,868
Cowling & Son. Menston, Yorkshire	4,850
Hird Brothers & Co., Keighley	4,800
Flesher & Sons, Yeadon, Yorkshire	4,775
I. Gould, Hunslet, Leeds	4,732
T. Smith, Burley Woodhead, Yorks	4,685
Waugh & Sons. Ilkley	4,660
Braithwaite & Co., Leeds	4,624
M. Hall. Bradford	4,578
Egan & Sons, Manningham	4,[illegible]60
T. Young & Sons, Wakefield	4,452
A. Dixon & Co., Bradford	4,425
T. E. Sugden, Keighley	4,250
H. V. Robinson,* Lawkholme Lane, Keighley	3,832

* Accepted.

Penmaenmawr (Wales).—For twelve workmen's dwellings at Penmaenmawr, North Wales, for Messrs. Brundrit & Co., quarry proprietors. Mr. Richard Davies, architect, Bangor :—

Jones & Pritchard, Abergele	£2,921	0	0
Roberts Brothers, Colwyn Bay ..	2,916	0	0
Roberts & Owen, Bangor	2,581	2	8
R. G. Williams,* Llanfairfechan ..	2,052	0	0
W. G. Williams Llanfairfechan ..	1,829	12	8

* Amended tender, with four of the houses made smaller in size, £1,956 (accepted).

Pontypridd.—For the constructon of about 1,530yds. of retaining and fence walls, and widening and forming carriageways and footways within their district, for the Urban District Council. Mr. P. R. A. Willoughby, A.M.I.C.E , engineer :—

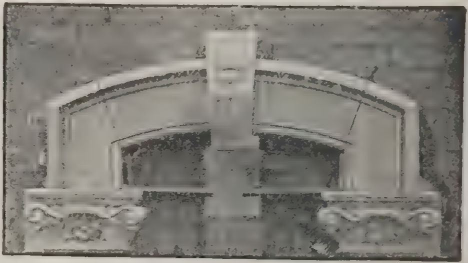
J. Sutherland, Clifton Villa, Abercynon	6,619	4	3
Williams & James, Pontypridd ..	5,904	[illegible]	9
R. J. Mathias, Pontypridd	5,773	6	6
C. Ash, Trallwn, Pontypridd	5,732	0	8
Jones & Davies,* 20, Regent Street, Dowlais	5,382	13	3

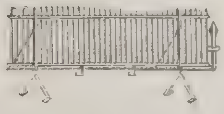
* Accepted.

(*Continued on* p. xvi.)

ROOFING SLATES:
Velinheli, Penrhyn, and Westmoreland.
SLATE SLAB GOODS:
Both Plain and Enamelled.
ALFRED CARTER & CO., LIVERPOOL.

LIGHT & DARK SEA GREEN STONE,
MOTTLED GREEN STONE,
For Mullions, Sills, Heads, Quoins, Jambs, Fenders, &c.
Buttermere Green Slate and Stone Works,
KESWICK.


"FAVOURITE" DOOR HEAD.
Opening 2' 6" to 3' 0" Caps 10" × 12"
Price £1. Window Heads, from 5s.
WALWYN T. CHAPMAN,
Terra Cotta Works, CLEETHORPES.

BAYLISS, JONES & BAYLISS, LTD
WOLVERHAMPTON.
LONDON SHOW ROOMS:-
139 & 141 CANNON STE.C.
CATALOGUES FREE.
Manufacturers of WROUGHT-IRON GATES, &c.
RAILING.

LOW PRICES.

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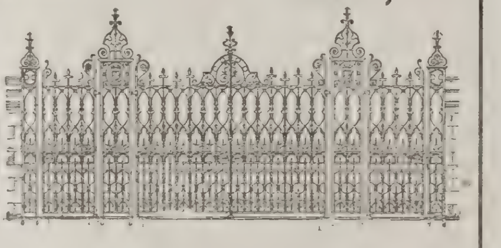

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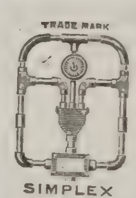

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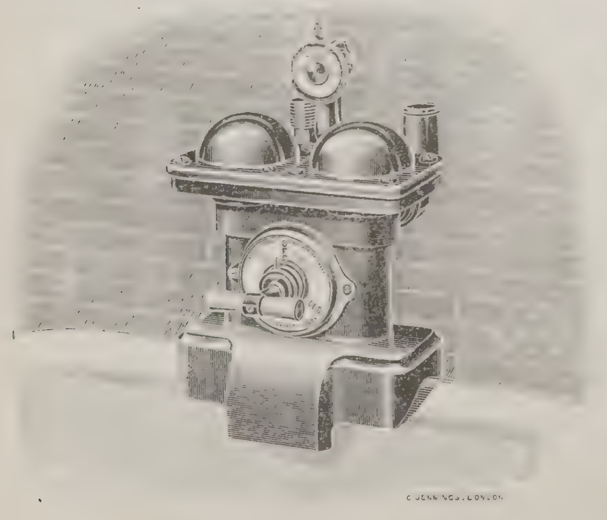
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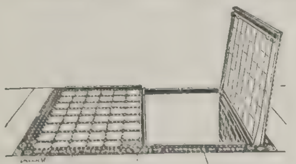

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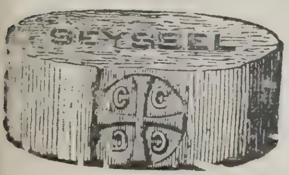

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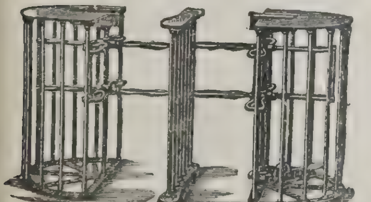

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TENDERS (*cont. from* p. xiv.)

Portsmouth.—For the construction of workshops and offices at Gladys Avenue, North End, Portsmouth, for the Corporation:—

H. Sweetland, Southsea, and Lambeth, S.E.	£10,800
J. Hunt, South Wharf, Gosport	10,568
W. W. Evans, Southsea	9,900
J. W. Perkins, Fratton, Portsmouth	9,799
J. Smith & Sons, Ltd., South Norwood, London, S.E.	9,729
P. H. Dowell, Portsmouth	9,425
W. T. Dugan, Portsea	9,151
S. Salter, Southsea	9,089
J. Crockerell, Southsea	8,999
M. Coltherup,* 24, Lombard Street, Portsmouth	8,150

* Accepted.

St. Leonards-on-Sea.—For the construction of new roads, the continuation of Clinton Crescent to Sedlescombe Road, and the laying of pipe sewer, &c., for the Trustees of the Eversfield Estate. Mr. F. H. Humphreys, F.R,I.B.A., surveyor, 6, Trinity Street, Hastings:—

A. C. Soan, Streatham, S.W.	£2,134	5	0
J. C. Trueman, Swanley, Kent	1,717	0	0
C. Peerless, Denniss & Co., Eastbourne	1,568	0	0
W. Piper, Hastings	1,443	5	7
H. Small, Ore	1,420	0	0
J. O. Piper, Hastings	1,372	0	0
Padgham & Hutchinson,* Tower Terrace, London Road, St. Leonards	1,308	0	0
W. Smith, Silverhill, St. Leonards	1,048	0	0

* Accepted.

Wyke Regis (Weymouth).—For the main sewerage and sewage disposal of Wyke Regis, for the Weymouth Rural District Council. Messrs. Lemon & Blizard, engineers, Southampton and Salisbury:—

R. H. B. Neal, Plymouth	£7,667	0	0
J. A. Bartlett, Weymouth	6,894	0	0
Bugbird & Co., Weymouth	6,203	0	0
F. W. Trimm, Dorking	5,481	0	0
Streeters & Todhunter, Godalming	5,268	0	0
A. G. Osenton, Tilehurst	5,129	17	3
S. Wood, Wilts	5,009	10	5
J. T. Whettam, junior, Weymouth	4,980	0	0
B. Cooke & Co, Westminster	4,900	0	0
Jesty & Baker,* Portland	4,600	0	0

* Provisionally accepted.

Wigston Magna.—For two villas, Central Avenue, for Messrs. Gilbert & Carter. Messrs. Miles & Beasley, architects, Friar Lane, Leicester:—

H. D. Smith, Wigston	£699	0
J. H. Poynton	623	0
J. G. Smith	612	18
W. G. Simons*	540	0
C. Southam & Son,† Wigston	505	0

[Rest of Leicester.]

* Accepted. † Withdrawn.

Wigston Magna.—For villa, Central Avenue, for Mr. A. Herbert. Messrs. Miles & Beasley, architects, Friar Lane, Leicester:—

H. D. Smith, Wigston	£343	0
J. H. Poynton	335	0
J. G. Smith	277	16
W. G. Simons*	245	0
C. Southam & Son, Wigston	245	0

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Trade and Craft.

Young & Marten's New Catalogue.

The new catalogue (tariff No. 27) which has just been issued by Messrs. Young & Marten, Ltd., Caledonian Works, Stratford, London, E., includes everything that a builder needs, and is a very useful book of reference. Among the innumerable illustrations, many of them coloured, we notice some from photographs of chimney-pieces in pine, whitewood, oak, walnut and mahogany: the prices of these are very moderate, ranging from 28s.—design No. R5332 is perhaps as pleasing as any, though we think it would be improved if the centre panel were omitted, or something neater substituted. Of iron mantels a great variety is shown, several of them departing widely from the old models and exhibiting decided influences of the "Arts and Crafts" movement, such as the "Coburg," the "Eastney," the "Crescent," the "Fawcett," the "Burnet," the "Hardwick" and the "Acacia" (the last two are very good designs). Some dozens of tiles are illustrated in the catalogue, and a large number of designs for leaded cathedral lights, embossed, stained and painted glass, fascias and stall plates. Plumbers' brasswork is very fully dealt with, all kinds of taps, plugs and gratings being shown; and there is a similarly extensive variety of cisterns, cowls, ventilators, pumps, baths, closets, and lavatory basins. Indeed, every requisite of a builder is shown. It would serve no purpose to enumerate a tithe of them, and we cannot do better than refer readers to the catalogue itself.

Coming Events.

Wednesday, April 15.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Associates' General Meeting at 8 p.m.

Saturday, April 18.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Edinburgh of the Glasgow Architectural Association.

Monday, April 20.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Mr. Edwin T. Hall on "Three Hospitals of Different Modern Types," 8 p.m.

SURVEYORS' INSTITUTION.—Mr. H. Trustram Eve on "Modern Methods of Valuation of Manorial Residences." 4 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION (Associates' Section).—Visit to Manderston Castle.

Tuesday, April 21.

GLASGOW ARCHITECTURAL ASSOCIATION.—Lecture by Mr. A. Hessell Tiltman, F.R.I.B.A.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Valedictory Address by the President, Mr. Frederick G. Hicks. Election of Officers, 7.45 p.m.

INSTITUTION OF CIVIL ENGINEERS. — Messrs. James Tayler Milton, M.I.C.E., and William James Larke on "The Decay of Metals," 8 p m.

Wednesday, April 22.

EDINBURGH ARCHITECTURAL ASSOCIATION. — Annual Business Meeting and President's Valedictory Address by Mr. A. Hunter Crawford.

CHEMICAL SOCIETY.—Meeting at 5.30 p.m.

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver.]

E. LEE & Co., builders, Wealdstone. R.O. March 30th.

T. ELLIS, builder, Eastbourne. R.O. April 1st.

H. N. DAVISON, builder and contractor, Moss Side, Manchester. R.O., April 4th.

T. WARDEN, builder, Leicester. Liabilities £630 10s.; assets £185.

C. A. GOLDFINCH, builder, Shepherd's Bush, London. R.O., April 3rd.

G. J. GAWLEY, steam haulage contractor, Reading. R.O. March 28th.

J. ROBINSON, brick manufacturer, Billingham. R.O. March 31st.

PENNICK & TAYLOR, builders, Clacton-on-Sea. P.E., Colchester Town Hall, May 8th, at 11.30.

HUNTLEY BROTHERS, builders and contractors, Croydon. R.O. April 3rd.

JONES & ROWLANDS, architects, Mumbles and Swansea. R.O. March 30th.

R. ARCHER, builder, Handsworth. Liabilities £660; assets £408.

NASH & NASH, builders and contractors, Thornton Heath. R.O. March 31st.

M. & J. KEANE, builders and contractors, Maesteg. First meeting, O.R's., Cardiff, April 16th, at 12.30. P.E., Cardiff Town Hall, May 12th, at 11.

G. F. SIBLEY, builder, Twickenham. First meeting, O.R's., 95, Temple Chambers, E.C., April 18th, at 11. P.E., Brentford Town Hall, May 1st, at 12.

J. J. AUSTIN, builder and contractor, West Bridgford, Nottingham. R.O., February. Liabilities £3,708; assets £220; £1,393 to rank for dividend.

A. ATHERTON, builder, Bolton. R.O. April 1st. First meeting, 19, Exchange Street, Bolton, April 15th, at 3. P.E., Bolton C.C., April 29th, at 3.

DUNN & BOOTH, well-sinkers and engineers, Goswell Road, London, E.C. First meeting, Bankruptcy Court, April 20th, at 12. P.E., Bankruptcy Court, May 20th, at 11.

New Companies.

CALVERT & SCALES, LTD., joiners, cabinet makers, &c. Capital: £2,000 in £1 shares.

RIPPIN & RAKE, LTD., builders and contractors, &c., 33, Cheapside, E.C. Capital: £3,000 in £1 shares.

METROPOLITAN ENGINEERING ASSOCIATION, LTD., civil, electrical, sanitary, gas, water and mechanical engineers, &c., 4, Queen Victoria Street, E.C. Capital: £10,000 in £1 shares.

CONGLETON SILICA BRICK AND GANISTER CO., LTD., manufacturers in fire-resisting goods, ganister and silica bricks, &c., Copper Hill, Congleton, Cheshire. Capital: £5,000 in £1 shares.

BURSLEM BRICK AND MARL CO., Ltd., workers of beds, seams and veins of fire-clay, marl, brick, earth, &c., Cobridge Hall, Sneyd Street, Burslem, Staffordshire. Capital: £6,000 in £1 shares.

LEYSDOWN AND SHELLNESS ESTATES, LTD., estate owners, builders, contractors, decorators, stone merchants, quarry masters, brick, tile, and pipe makers, 24, Lincoln's Inn Fields, W.C. Capital: £15,000 in £1 shares.

W. P. GRIGGS & CO., LTD., builders, contractors, and land and estate developers, to lay out and prepare land for building purposes, to deal in stone, sand, lime, bricks, tiles, terra-cotta and building materials, &c., 7, The Drive, Ilford. Capital: £100,000 in £1 shares.

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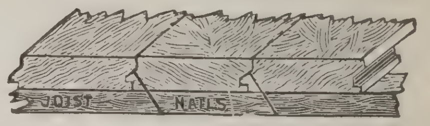

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THE

BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

April 22, 1903. Vol. 17, No. 428. 9, East Harding Street, E.C.

Americanized Labour. ALMOST coincident with the reports of Mr. Alfred Mosely's Industrial Commission to the United States comes the news that the Board of the Building Trades in New York, representing 60,000 men, and said to be the strongest labour organization in the United States, threatens a strike on May 1st if the demands for increased wages, ranging from 10 per cent. in some branches to 20 per cent. in others, are not granted. During the last few years, which have seen an unprecedented activity in the building trade of New York, workmen have not only shared in the general prosperity by having nearly all their demands satisfied, but have also so strengthened themselves as a body that, through the Board of the Building Trades, they now control practically all skilled labour in their line in and near New York. Very few workmen now receive less than 4 dollars a day, and it is believed that the employers will refuse to grant any further concessions. Turning to our own affairs, we notice that there is quite a Spring epidemic of building strikes all over the country—nothing exceptional, it is true, for the workmen are discreet in making their demands when the winter is over and at a time when their labour is most needed. The comparison between American and English methods is interesting. Mr. Mosely himself considers that the "true-born American is a better-educated, better-housed, better-fed, better-clothed and more energetic man than his British brother, and infinitely more sober; as a natural consequence, he is more capable of using his brains as well as his hands." But this conclusion is by no means generally endorsed by the delegates, who, it will be remembered, represented twenty-three trade unions of this country, and were taken by Mr. Mosely for two months last year to study American methods But, though they do not all admit that the American workman works harder than his British *confrère*, it is agreed that the production per man is greater, the difference being attributed to better organization, labour-saving machinery, worse quality of product, &c. Mr. Taylor's opinion is that the average output (in bulk) of the bricklayer in America is greater than here, but he maintains that American bricklaying is so different in character and generally so much rougher that to make a proper comparison is very difficult; in his view the British bricklayer gives better value for his money than the American, the contrast being between a smaller quantity of better quality for a low wage and a larger quantity of lower quality for a much higher wage. Mr. Deller says the American plasterer "undoubtedly covers more ground than we in England do, but the quality is very inferior." His report, indeed, is full of the badness of the work and of the conditions under which it is carried out. At the post office at Buffalo, "a fine building," he says, there is "plenty of plastering of fairly good design, but executed in such a manner as to make it a standing disgrace to the trade." And so on. Meanwhile we may remember what has been done at the Westinghouse Works at Manchester, and what is now in progress at the Savoy Hotel extensions under the same direction. The secret of the whole matter is that under the American system the workman is paid better wages, is energetically supervised, provided with labour-saving machinery and taught to use his brains. English contractors would do well to embody these methods with their own.

The Normans in Britain. A COLLECTION of about two hundred photographs of Norman tympana and doorheads existing in churches throughout Great Britain is now on exhibition in the entrance corridor to the Guildhall library. We congratulate Mr. Charles E. Keyser, F.S.A., on this admirable collection, though it is to be regretted that such inadequate provision should have been made for it—photographs, even though large, can hardly be examined when they are placed 10ft. and more to the ceiling, and one would have thought that the Guildhall authorities could at least have found some room where so interesting a collection might have been exhibited in a proper manner: as it is, only those photographs on about eye-line can be carefully examined. We would recommend all those who are interested in Norman work to visit this exhibition. They will find that Mr. Keyser has most exhaustively recorded the examples all over the kingdom—in small churches in out-of-the-way districts as well as in cathedral cities—and as the photographs are large and uniform in size they can be studied and compared most profitably. The Norman zigzag and chevron, the rude carving and symbolical reliefs are well rendered; the texture of the stone being remarkably well shown. The period covered extends from 1060 to 1180.

Further Market Report. ENCOURAGING reports from the allied societies created a firmer feeling in the Architectural Money-market, though registration received something of a set-back, owing to quiet Institute advices. Drawing was on a small scale. The plan factories, however, maintained a steady output, and several secured work for leading positions in London. The Liverpool market was quiet, but some business took place in baths and libraries. Cathedral stocks engaged attention. Tappers were offered at 10¼–10½, and A. and P.'s at 10⅖, while Starks, Scotts and Nicholsons hardened a trifle. Emersons were deferred. The country-house market exhibited some signs of life, due to the efforts of the Amalgamated Society of Cribbers. Arts and Crafts found ready buyers, but showed considerable unsteadiness, especially in furniture: raw material was in abundance, and spot parcels were going at a low rate. Nouveau wriggled somewhat, but showed little signs of improvement. Spiers had an upward tendency, and Orders were readily placed. Norman Shaws seemed to have retired from the market, though something was done with Gaiety Theatres. Aston Webbs made more money, SKs. rising considerably despite weather conditions. There was a good deal of frost about the competition market, but this did not check prospectors, and reports from all over the country show extensive drawings. Architectural Vigilance was steady, but consumers were rather disposed to hold off owing to the uncertainty of the situation. Exeter glass was at a discount, several observers being averse to Peckitts changing hands. R.I.B.A. stock showed no change. A.A. ducklings were, as usual, well to the front, though a movement is expected in the summer. A steady business was done in Hare town-halls and there was some demand for Belcher offices at high rates. In the rough-cast market Voysey houses were healthy, several f.o.b. quotations being received; but elsewhere the eaves showed a drooping tendency; rainwater butts created a general demand. There was a great rush for Academy perspectives exhibiting the latest optical illusions. Iron was hard but showed signs of decay. Cement hardened but bricks came down, and there was a sharp fall in campaniles, which unfavourably affected the bumper traffic. A very large consumptive business is being done in Sanatoria.

GLASGOW INSTITUTE OF ARCHITECTS.

Annual General Meeting.

At the recent annual general meeting of this Institute—Mr. Horatio K. Bromhead, F.R.I.B.A., president, in the chair—the secretary read the thirty-fifth annual report. Reference was made in it to the sixth triennial competition for the Alexander Thomson travelling studentship which was held in February and for which five sets of drawings were sent in, coming respectively from London, Liverpool, Edinburgh and Glasgow (two sets). While the trustees would gladly see a larger response in the number of competitors, they have reason to be gratified not only by the wide area from which these were drawn but by the high standard of excellence reached in most, if not all, of the works submitted. It had been decided that, should the results warrant it, a second prize of £20 (with somewhat similar conditions to those attached to the scholarship itself) should be awarded on this occasion.

The president, in moving the adoption of the report, said it appeared to him that the most remarkable event of the past year was the way in which the housing question had been thrust forward. The housing problem was a scarcity of small houses that the poor could and would like to live in. Usually the subject was regarded as like a jellyfish, without any backbone of its own, something that was nasty and must be pushed with a stick. But the backbone of the subject was the will, the desire of the poor. If the city were taxed to provide a new department in which working men could get a really good black frockcoat and white gloves at half their value, would they go and buy them? Not a bit of it. But if an addition to the Police Act compelled them to buy, what then? Why, it would be found that the working man had a command of language quite beyond what was known of him. He wanted "shoddy." It was shoddy houses that were wanted for the poor—cheap and wholesome houses that a man could pay an honest rent for, without the degradation of knowing that he was being made a pauper by having his rent partly paid by taxes on other people. How were we to get these houses? If we got rid of our purse-proudishness about the cost of our buildings, and got rid of the cruel exactions of our Police and Building Acts, and were to strive to have, right within the city bounds, districts where we might be proud of knowing that working people could and would like to live cheaply and comfortably, and yet where capital would not be cheated, we should have an ideal that would lead in a sound direction. In the Liverpool City Council it was said that if they went on building for 2,000 people every year for fifty years they might make up arrears. In Glasgow a million pounds would be a mere drop of what was required.

Speaking of the Glasgow Royal Infirmary reconstruction scheme, he said it was still on the horns of a dilemma. The governing power had a plan that, according to American phraseology, "can't be beat," and so they issued this plan to a few architects in a competition for decorating it. But alas! architectural human nature was also weak. Not only did several of the architects venture to improve, or should he say alter, the "immaculate" plan, but the architectural assessor considered these the best, and gave his award accordingly. The committee, however, were equal to the emergency. They overruled the assessor's award and chose the design that most closely followed their own "immaculate" one. Possibly they thought that its "immaculateness" far outweighed any and all of the bad and miserable features that might have been discovered in the design by the assessor.

The Council for ensuing year was elected as follows:—Messrs. J. A. Morris, David Barclay, A. N. Paterson, John Keppie, H. K. Bromhead, James Lindsay, N. Macwhannell, T. L. Watson, J. M. Monro, Alexander M'Gibbon, J. A. Campbell, A. Balfour, W. J. Boston, Charles Gourlay, T. Baird, jun., and Andrew Black. The treasurer's accounts, which were submitted and approved, showed that the funds were in a satisfactory position. A meeting of the newly-elected Council followed, at which office-bearers for the year were appointed:—President, Mr. Horatio K. Bromhead, F.R.I.B.A.; vice-president, Mr. John Keppie; auditor, Mr. David Barclay, F.R.I.B.A.; secretary and treasurer, Mr. C. J. Maclean. The various committees for the year were also appointed, including committees on public architecture and on architectural education, &c.

Correspondence.

Buildings in the Abergavenny District.

To the Editor of The Builders' Journal.

London, S.W.

Sir,—Allow me to suggest as buildings to measure:—(1) Raglan Castle (about 9 miles), vigorous but rather coarse in detail. (2) Kilpeck Church, almost pure Norman throughout with good and elaborate detail and an apse—a very good subject. (3) Tintern, of course; but I fancy measuring is not allowed now. (4) St. Mary's, Abergavenny, is disappointing, but has some interesting monuments in the Herbert Chapel. (5) Llanthony Abbey (9 miles), interesting, of the Augustine foundation, Early English. (6) Crickhowell, a small but charming church. Burrow's "Gate of Wales," 6d. (published by Burrow, of Cheltenham), will give your correspondent views, plans, &c. (except of Kilpeck), and he can form his own judgment before visiting.—Yours truly,

PHILIP A. ROBSON, A.R.I.B.A.

The Yeovil Competition.

To the Editor of The Builders' Journal.

10, Gray's Inn Square, W.C.

Sir,—The following facts relating to the above competition may prove of interest to your readers, and may serve as a warning to intending competitors.

On January 24th last a notice appeared in the "Somerset Herald" to the effect that the Corporation of Yeovil intended to invite competitive plans for the development of some Corporation property in High Street and South Street. Provision was to be made for a Technical Institute, Free Library, Town Hall, Municipal Offices, Corn Exchange, fish, vegetable and fruit market, Fire Station, together with Justices' Rooms, County Court, Mayor's Parlour, &c. In addition to these as much as possible of the ground floor in High Street was to be laid out for shops, and the competitors were to decide whether there should be a wide street or a covered arcade in place of a court which at present connects High Street with South Street.

Premiums of 20 and 10 guineas were offered for the schemes placed first and second respectively.

It was to be understood that the Council had no intention of proceeding immediately with carrying out the whole scheme, the idea being to begin with the Free Library and Technical Institute.

The attention of the Royal Institute of British Architects was called to the matter, and a letter was written by their secretary to the Corporation pointing out the inadequacy of the premiums and urging the appointment of a professional assessor to draw up the conditions upon the basis of the Institute's "Suggestions." In the meantime the members of the Competition Reform Society had been requested to abstain from competing. No notice being taken by the Yeovil Corporation of the R.I.B.A.'s letters, a statement to that effect was published in the R.I.B.A. Journal of March 21st with a request that the members of the Institute should abstain from entering the competition.

I have recently received a copy of the list of the Council's replies to the competitors' questions arising out of the conditions and particulars issued by the Town Council for the guidance of architects. The following extracts will give an idea of the spirit in which the competition has been conceived:—

Questions.	Replies.
1. Will the architects whose design is chosen be engaged to carry out the buildings as the Council's architect?	Not necessarily.
2. Should any amount as regards cost be considered in designing? If so, how much?	No Arrangement to be considered only. Question of cost will be considered in carrying out.
4. Is there any likelihood that the conditions will be at all revised as the premiums offered seem low for the value of work required?	No.
36. Will the Corporation give a guarantee that the author of the selected design will be employed to carry out the work?	No.
38. Will a professional assessor be appointed to adjudicate upon the schemes?	No.

These particulars will be sufficient to show that the Yeovil Corporation expects to receive schemes for laying-out a large area of ground. The planning of the schemes should entail considerably more work than will be apparent upon the plans submitted, for in justice to the Corporation it must be stated that "detail plans of the various buildings are not required," although explanatory drawings to a larger scale (⅛in.) may be submitted at the architect's option.

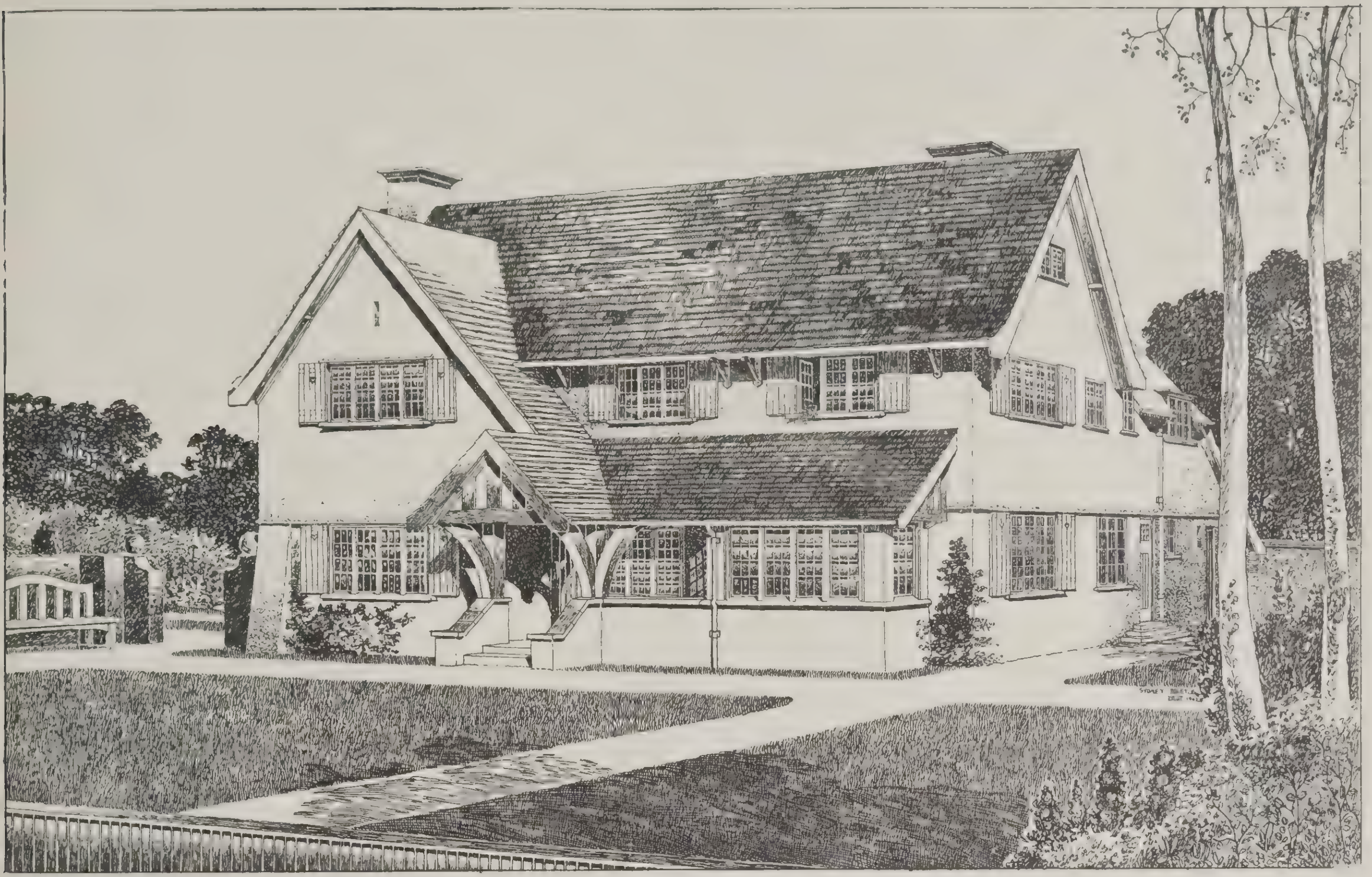
For the very considerable amount of thought, work and special knowledge which would have to be displayed in the preparation of a scheme in order that it might do credit alike to the competition and the town of Yeovil, the following inducements are offered:—(1) Premiums of 20 and 10 guineas respectively to the authors of the two designs placed first. (2) No professional assessor. (3) No undertaking that the author of the selected design will be engaged as the Corporation's architect, or that he shall be employed to carry out the work.

Unfortunately for Yeovil there have been at least thirty applications for the conditions, and there seems little doubt that a certain number of designs will be submitted. It has been ascertained that the Corporation has little or no money to spend upon the majority of the buildings. Mr. Carnegie has promised £2,500 for a Free Library, and there is a similar sum available for a Technical Institute, one or both of which may be erected shortly.

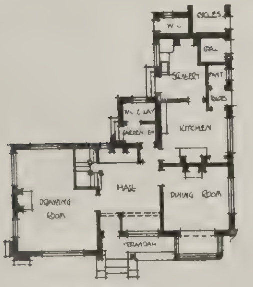
It is satisfactory to know that the architects of Yeovil have no intention of competing, and that they have already made their protest to the Corporation. It is to be hoped that all architect-readers of your Journal will do likewise and so assist in making of the Yeovil Competition as big a failure as the recent case of the St. Ives Municipal Buildings.—Yours truly,

HENRY A. SAUL.
Hon. Sec., Competition Reform Society.

House at Wimbledon, Surrey.—This house is now completed, and stands in the Belvedere Grove. The walls are externally covered with soft cream rough-cast, and the roofs with Reading tiles. The woodwork to porch is in Oregon pine. The woodwork to windows is painted green, and the iron-work black. Internally the hall is treated in oak. Mr. A. J. Hardwick, of Kingston, was the architect, and Mr. E. D. Hobbs, of Thames Ditton, Surrey, the builder.



HOUSE AT WIMBLEDON. A. JESSOP HARDWICK, ARCHITECT.



MODERN ARCHITECTURE.

MR. CHARLES OWER delivered a lecture on "Modern Architecture" before the Dundee Institute of Architecture, Science and Art last week. Mr. A. A. Symon, the president, occupied the chair. Mr. Ower said he believed architecture was more necessary to our happy existence than any other art. Architecture was not building, and it was certainly not designing. It was the art of designing and building in such a manner that the completed work was durable, healthful, useful, interesting and pleasing to the eye. The combination of technical constructive skill with imagination differentiated architecture from the other fine arts of painting, sculpture and music. Patrons of the art were so increased in number that to the best of his belief there were more buildings of an architectural character produced in ten years at the present time than were erected in the whole ancient and mediæval world during the period preceding the Renaissance of architecture in Italy in the fourteenth century. If all the ancient styles had produced beautiful buildings, being diverse, he maintained that at the present time among the multitude of buildings being erected there were works which were worthy to be ranked with the ancient examples. The distinctive spirit of modern architecture was the selection of the beautiful in design and materials, and the use of the same without relation to any special style or convention. The time was past, but not long past, when some of the rigidly architectural righteous would have argued that without adherence to style there could be no beauty. In simplicity lay their greatest hope for the architectural future, but that should not be an excuse for poverty of design and materials. Moderns ought to know the principles which guided the great designers in the past. It would be found, however, that the conditions of life as now existing, as well as the new materials which were available for use in building, were so entirely different from what operated in the past that the true test of architectural ability was not how closely could a copy be made of some past designer's work, but how completely could the work be made to serve the purposes of everyday life, and to use the new materials in such manner that the resulting building shall be beautiful, useful and not wasteful. After illustrating this point of view by commenting upon various examples, he went on to say that modern architecture had an immense field before it in utilising new methods and materials. It was already showing the effect of the change in roof forms. The modern architect had many considerations to weigh in designing any building, and the first was utility. Modern churches, owing to the influence of the clergy, continued to be learned reproductions of a dead style. In all parts of the civilised world works had been executed lately in which much originality in design had been conspicuous. In Britain, America and Germany some very great works had been undertaken, and in France there had been much work remarkable for its requisite detail and excellent taste. Mr. Ower showed a large number of slides of notable new buildings in this country and the Continent.

LIVERPOOL BATHS COMPETITION.

THE drawings submitted in the important competition of the Liverpool Corporation for baths and tramway offices on the St. George's Dock site present most interesting subjects for study.

The bottom of the dock is between 30ft. to 40ft below the street level, and is in shape a trapezium with the narrowest side facing the river frontage. Under the conditions of competition, it was left to the competitors to suggest the positions of the baths, whether at the bottom of the dock, at a level with the street, or in any other position preferred by the competitor, the main stipulations being that the tramway offices should face the river, that the external treatment of the building should harmonize with that of the intended new Dock Board Offices adjacent, that there should be certain accommodation provided in the baths and tramway offices, and that other portions of the building should be devoted to letting offices.

In the majority of the designs submitted their authors seem to have expected that the Corporation would desire a building as much like the Dock Board Offices as decency would permit, and that the development of architecture from the straightforward designing of a building to fulfil its purpose and to honestly express its intention would not meet with any success or encouragement.

The designs number seventeen, and may be tabulated into two main groups: (1) those which express distinct buildings for baths, tramway offices and letting-offices, and (2) those which cloak the separate purpose of each division (especially that of the swimming baths) by a shell, or mask, which suggests nothing so much as a second set of dock board offices having its inside portions cleared away to make space for baths or other buildings. The first-premiated design belongs to this latter group.

It seems obvious to us that the treatment of a building should follow its plan and purpose, and to group together, as an undefined whole, buildings having such widely different purposes as those of swimming baths, Turkish and slipper baths, tramway offices and letting-offices, in a way quite undistinguishable from the suggested purpose of the adjacent Dock Board Offices, is one of the worst possible degradations of the art of building, and certainly cannot be termed architecture. For the reasons above we think the result of this competition disappointing, architecturally. From a purely practical point of view, also, we think the designs submitted do not in any one of them exhibit that grasp of the requirements of the situation which would lead to wholly convenient buildings being erected therefrom. Individual parts of the different designs may exhibit simplicity and directness of plan in some one or more respects, but there is not one design which in our opinion is uniformly successful in the arrangement of the men's first- and second-class and women's swimming baths, the men's and women's Turkish, Russian and slipper baths, the approaches thereto, the tramway offices and the letting-offices. In the Turkish, Russian and slipper baths, especially, there is no one design whose author has fully recognized and met the necessities of a well-arranged suite of such baths; no easy matter, we admit, to achieve, but still worthy of further struggles to accomplish. We are inclined to think that the reason for the failure of this competition to bring forward a thoroughly well-conceived design, architecturally speaking (which, of course, means also practically speaking), is the stipulation that the intended Dock Board Offices adjacent should be the keynote for the external treatment of the Corporation building, and the inclusion of too many buildings within the site. We do not, as a rule, recommend competitions, and much less repeated competitions, but a competition having been held in this case, the result being, in our opinion, so unsatisfactory, and the site and buildings being of so important a character, we should like to see, in this particular instance, a new competition inaugurated upon the lines we have suggested; and we think a happier design might then be forthcoming.

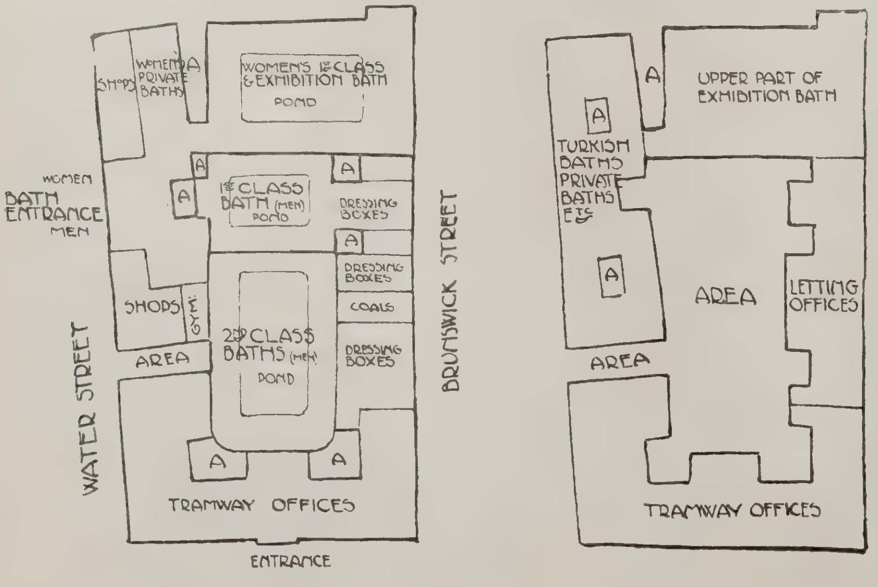
We shall now briefly refer to the several designs submitted.

Design No. 11. 1st Premiated. Messrs. Stones & Stones, of Blackburn, with Mr. W. E. Sproat, of Glasgow.—In this design the authors have conveniently ignored the actual site, and have squared it up to suit their building.

This is one of the designs of the hollow shell type before referred to, and conveys the suggestion of dock board offices, municipal buildings, or a town hall, but certainly not of baths. There is a multiplicity of entrances for the different departments, and the latter overlap each other instead of being separately blocked together, the result being that the baths are darkened by superimposed buildings, whilst the latter are rendered noisy and unsatisfactory by the baths below them. The boiler-room, placed under the pond of the second-class men's swimming bath, would probably be a source of trouble in the future by affecting the temperature and the water-tightness of the pond. The baths and corridors are, as a whole, ill-lighted, the most glaring instance being that of the first-class men's swimming bath, half of which is covered by other buildings. By the assessor's award, it appears to be admitted that in plan this design leaves much to be desired, and we are inclined to think that a further study of some of the other designs would not lead to the selection of this particular one as the first premiated by reason of its exterior treatment. The elevations of the Dock Board Offices strongly inspire this design, the substitution of a rather tamely-detailed tower for the dome of the former building being the most notable variation. The effective drawing of the perspective view has, perhaps, had much to do with the favourable position in the competition which this design has obtained.

No 14

Design No. 3. 2nd Premiated. Messrs. Briggs & Wolstenholme, with Messrs. Arnold, Thornley & Hobbs, of Liverpool.—The most notable feature of this design is the concentration of the entrances for all classes and sexes using the baths upon one point, and the central position of the superintendent's office at that point. This idea has merit, economically; but in this country of class and sex distinction it would probably not meet with the approval of all the wished-for users of the baths. The swimming baths are placed at about 7ft. below the street level, and a large portion of the lower part of the old dock is not utilized. The tramway offices, the exhibition bath (women's swimming bath), the Turkish, Russian and slipper baths, and the letting offices, are distinct blocks of buildings, but are not happily treated, the exhibition bath alone expressing its purpose as a separate self-contained building.



GROUND-FLOOR PLAN. FIRST-FLOOR PLAN.

NO. 3.

The exterior treatment of the building is somewhat halting and tame, the exhibition bath, especially its entrances, being, however, bolder and more interesting than the remainder. The effort appears to have been to group the several departments as a whole so as to make a block of buildings as similar in proportion to the Dock Board Offices as possible, whilst endeavouring to present a contrast in the detail of the two buildings.

Design No. 5. 3rd Premiated. Mr. Huon A. Matear, of Liverpool, with Messrs. Simon & Crawford, of Liverpool and Manchester. —This design in the grouping of the buildings and their treatment is a most welcome change from the designs placed first and second. The authors have recognized that baths are baths, and not dock board offices, and have striven to work out their design accordingly. The grouping is good, but the working out of the buildings is architecturally poor and uninteresting, the baths block being less so, perhaps, than the tramway offices and the letting-offices, though the screen wall connecting these upon the Water Street side, as shown in the perspective view, is suggestive of a piazza rather than of the end wall of one of the swimming-baths, with the ridge ventilators of the bath roof appearing above the wall. These ventilators have been conveniently omitted in the perspective view. The architectural treatment of the interior is mediocre, and is especially disappointing in respect of the men's Turkish baths, the plan of which led us to expect a rather pleasing architectural treatment which has not been realised in pseudo-Oriental orthodoxy. Several parts of the buildings are happily planned and are quite simple and direct; and we cannot help wishing that some really good ideas which the design suggests have not been better worked out and treated in a more scholarly manner.

Design No. 1.—A somewhat indirect and involved plan, and the elevations without particular interest.

Design No. 2.—The swimming-baths are

an entirely detached building within a mask of narrow buildings on three sides of the site, and an open colonnaded screen on the fourth side. Use is made of the entire area of the old dock for warehousing or other purposes. The swimming-baths are fairly planned, but spoiled by the Turkish and slipper baths being placed over portions of them, and the latter are not thoroughly worked out.

Design No. 4.—A rather crude and undigested scheme.

Design No. 6.—This design does not call for special comment.

Design No. 7.—The design as a whole is disjointed, the exhibition bath is small and not well planned, and the approaches are unsatisfactory.

Design No. 8.—A simple and direct plan having possibilities, the elevations rather commonplace. The swimming-baths are placed in the centre and masked by an U-shaped screen of narrow buildings.

Design No. 9.—The baths are arranged in the centre and masked by screen blocks of narrow buildings on three sides, and by an open colonnade on the fourth side. The design of the building does not disclose its purpose, but it is quiet and restrained, and has interest.

Design No. 10.—This design shows a satisfactory treatment of the angles of a large edifice, and the detail is pleasing and scholarly; but the building does not suggest its purpose.

Design No. 12.—Another example of the swimming-baths grouped into the centre of the site and masked by other buildings.

Design No. 13.—Some of the individual departments exhibit good straightforward planning, but the arrangement as a whole is scattered, the external treatment is in parts successful but not uniformly good, and the skyline is ineffective.

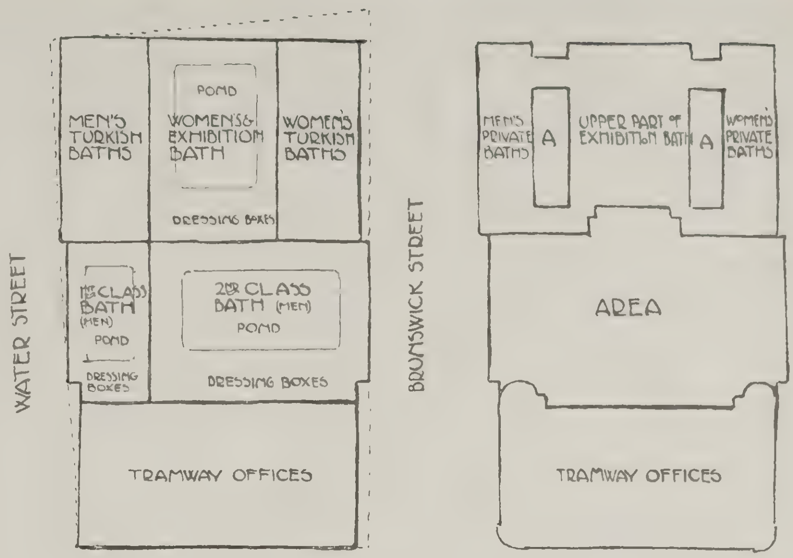
Design No. 14.—An economically designed building, both in plan and elevation, and in many respects a departure from the style of work prevailing throughout the other designs, but scarcely harmonizing with the Dock Board Offices, and rather suggestive of the "Glasgow School." Has a certain freshness of interest in parts, but somewhat monotonous as a whole. The tower is good.

Design No. 15.—Offices arranged over the baths, to the detriment of both as regards light and quietude respectively. Baths all arranged in the basement and consequently a large area devoted to letting-offices.

Design No. 16.—Some good ideas not well worked out; the swimming-baths placed above each other are not satisfactory, but the design has interest as being an attempt to treat the baths as a separate building expressing its purpose.

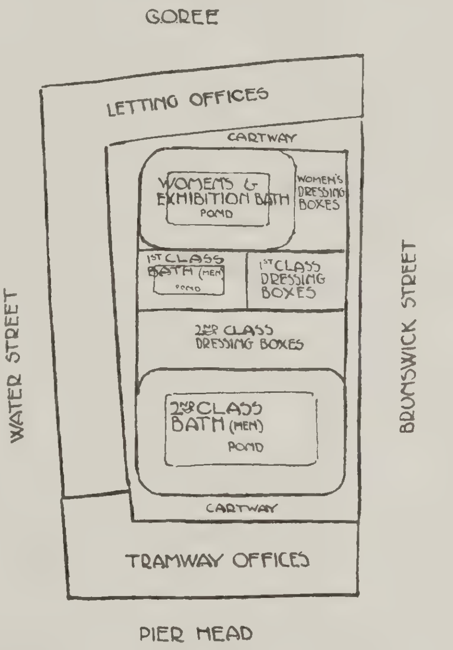
Design No. 17.—The elevations might have been more pleasing had one attic storey been omitted. The swimming-baths are arranged in the centre of the site, and the several blocks of departments are well concentrated; but some of the approaches are lengthy, ill-lighted and indirect, and the design, as a whole, is not quite happily conceived and developed.

A block of Flats is to be erected in the Moscow Road, Bayswater, to be called "Queen's Court," under the direction of Messrs. Palgrave & Co., architects, Westminster. The building will consist of thirty self-contained residential flats ranging from six to eight rooms. The elevations will be carried out in red bricks with gauged brick aprons, arches, &c., and the roofs covered with green slates. There will be electric passenger lifts to all floors. Mr. C. Gray, of West Hampstead, is the contractor, and Mr. George Stephenson, of Queen Victoria Street, E.C., the quantity surveyor. The estimated cost is £30,000.



BASEMENT PLAN. FIRST-FLOOR PLAN.

NO. 5.



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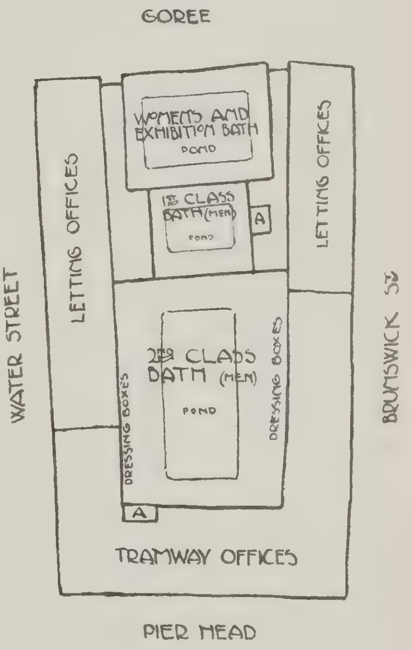

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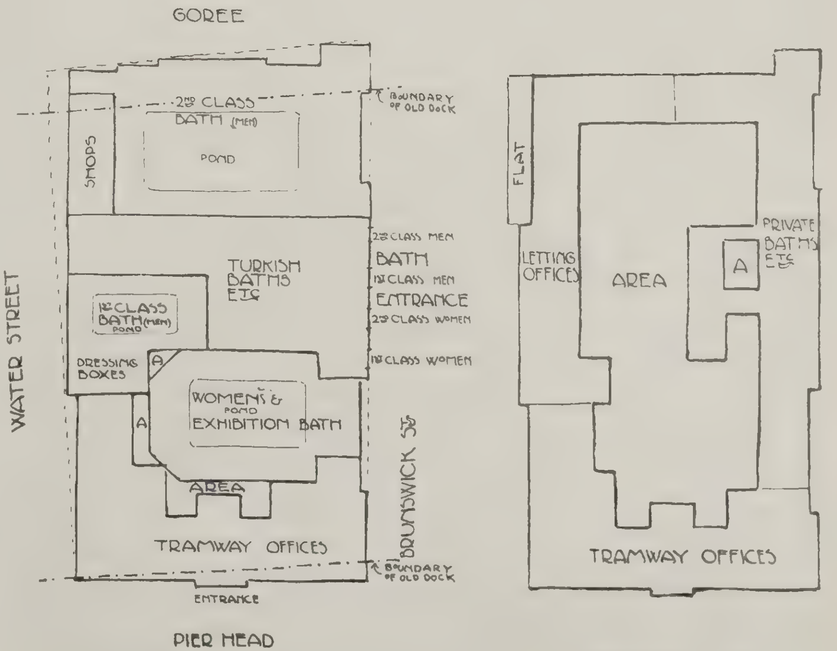

GROUND-FLOOR PLAN. FIRST-FLOOR PLAN.

NO 11.

BITUMEN.*

ITS APPLICATION IN ARCHITECTURE AND ENGINEERING.

By ALLAN GREENWELL, F.G.S., A.M.I.C.E., M.S.I., Editor of the "Colliery Guardian," &c.

SEEING that bitumen in one form or another occupies such a prominent place in both architectural and engineering construction, it is somewhat surprising that more attention has not been given to the subject by professional men.

A clear understanding as to what bitumen is is somewhat rare, as at times one hears the ordinary coal-tar pitch asphalt spoken of as bitumen; it is therefore desirable that at the very outset we should avoid any confusion in the use of terms. So far as the term "bitumen" is used throughout this paper it will mean the natural hydro carbon bitumen or asphaltum procured from one or other of the well-known natural sources, and will not include any artificial by-product from coal.

Whilst to-day apparently bitumen is being brought to the fore as a material for damp-resisting and waterproofing, it must by no means be supposed that it is new in its application in these directions, for it is true, in this instance at least, "there is nothing new under the sun."

If we go back and examine the sacred pages, we find that the Ark was lined with bitumen in order to make it proof against the action of the water. Again, the life of the great law-giver Moses was preserved in a rush basket rendered impervious by means of asphaltum. It is also very certain that the valuable properties of bitumen were well known to the ancient Assyrians and Egyptians, as from recent discoveries it is certain that it was largely used by them as a cementing and preservative material.

According to Xenophon, the Median wall was built of burnt brick laid in bitumen, which was no doubt obtained from the renowned Fountain of Is, on a tributary of the Euphrates, as this source still yields bitumen. Further, we have it on the authority of Diodorus Siculus that the walls of Ancient Nineveh were built of bricks laid in bitumen, for he says, "In order to bind the bricks, they were covered with a layer of bitumen instead of simply tempered clay, and were arranged in courses, between each thirteenth course of which a bed of reed canes was introduced," these latter no doubt for bonding purposes.

That the Egyptians made extensive use of bitumen for preserving their dead is evidenced to-day by the many examples of its preservative properties, which can be seen in our museums, where so many of their illustrious dead have been transferred. The method evidently adopted by the Egyptians in the preservation of their dead was to first embalm the body, preservative materials being put in for this purpose (most of these are known, but there are some which still remain a mystery in spite of careful analysis). After this had been done a layer of bitumen about $\frac{1}{8}$in. thick was put on hot, tightly wrapped with canvas, then another layer of bitumen as before, more canvas, and so on until the process was considered complete. A specimen in a remarkably fine stage of preservation now rests in the British Museum; it represents a man in a forced recumbent posture, and probably dates from the Neolithic period.

Again we find that bitumen must have been largely used in the construction of many ancient monuments, as, for instance, in the tombs of Luxor, which was practically the site of Ancient Thebes. The perfect state of preservation of the tombs is due to the fact that bitumen was used as a waterproofing and preservative material, being run in apparently hot between the brickwork. It was in fact used by the Egyptians in all manner of buildings and in the construction of cisterns, silos and other works where waterproofing was necessary.

The use of bitumen seems to have been neglected, and to a very large extent forgotten, until in the year 1712 it was again brought into prominence by a Greek physician, Eyrini d'Eyrinus. The asphalt beds of the Val de Travers were first discovered and utilised by him, and he recommended the material as being "peculiarly suitable for covering of all kinds of constructions; to protect wood and stonework against decay, worms and the ravages of time, rendering them almost indestructible where exposed to wind, wet and extreme variations of temperature."

Eyrinus was aware that bituminous mortar had been used in the building of Ancient Babylon, and he himself succeeded in using it with great effect for the lining of cisterns and walls, as a cementing material, and for the flooring of warehouses, &c., but again after some time the material fell into disuse, the quarries of Val de Travers were even forgotten, and it was not until the year 1832 that the material was prominently and successfully reintroduced. The credit on this occasion is given to Count Sassenay, and in the year 1838 under his direction asphaltic stone (which is a limestone impregnated with bitumen to the extent of 7 or 8 to about 20 per cent) came to be pretty extensively used in France for pavements and roadways and for protecting floors and walls from the effects of damp. From France the application of the material for such purposes extended to other countries, and to-day there is a widespread demand for asphaltic pavements and roadways.

Having thus far traced the history of the material in its application from the earliest times down to the present day, the question which naturally arises in the mind is how it originated and what it really is.

Bitumen, according to Boussingault, on analysis is found to be made up as follows:—

Carbon - - - -	85 parts
Hydrogen - - -	12 ,,
Oxygen - - - -	3 ,,
	100 ,,

Composition of Trinidad Pitch.

Volatile organic matter -	76·75
Non-volatile organic matter	17·77
Ash - - - - - -	5·48

Chemical composition of Bitumen of Judea.

Carbon - - - - -	77·84
Hydrogen - - - - -	8·93
Oxygen - - - - -	11.54
Nitrogen - - - - -	1·70
Sulphur - - - - -	3·00

Bitumen.

Properties.—Variable according to purity. Specific gravity = 1·092.

Solubility.—Partially soluble in alcohol. More completely soluble in carbon bisulphide, petroleum spirit, chloroform, oil of turpentine, coal-tar, benzol, naphtha.

Action of Heat.—It softens at 58° to 60° C.; melts at 100° C. When distilled with water a volatile oil, called by Boussingault "petrolene," is given off. This is probably a mixture of paraffins.

The residue, called "asphaltine," resembles the original substance, but does not soften below 300° C., and decomposes below its melting-point. *Origin of Bitumen.*—Somewhat obscure, but probably the result of oxidation of the unsaturated hydrocarbons in petroleum. There are two main theories, viz.: (1) That bitumen has been formed by inorganic means, as a product of chemical action. This view is held by Mendeleeff. (2) That it is a distillate from animal or vegetable remains. Coal-tar pitch is the residue of coal tar after the separation of naphthas, phenols, creosote and anthracene oils. It amounts to about two-thirds the original weight of the coal tar before distillation. Its character varies with (1) temperature of distillation; (2) quality of coal distilled.

Chemical Composition of Coal-Tar Pitch.

Carbon - - - -	75·32
Hydrogen - - - -	8·19
Oxygen - - - -	16·06
Ash - - - - -	0·43

Sulphur and Nitrogen variable traces.

Coal-tar pitch may be either soft, hard or medium, according to quality of coal. The hardness depends greatly on the perfection to which distillation has been carried, and it is generally necessary to thin it down before use by addition of various tar oils. Only the heavy oils should be used, or the pitch will lose much of its binding or cementing power. It is obvious, therefore, that artificial pitch is not to be relied upon to the same extent as the natural product. Bitumen is thus an oxygenated hydrocarbon. It is found in diversities of strata, which may be classed in three principal divisions.

(1) In which the containing and adjacent rocks are of igneous origin—as in the case of Cuba, where Mr. Taylor, who made a careful examination of this district, remarks: "It seems very probable that all the bituminous matters, whether known under the names of chapapote, asphalt, mineral pitch, petroleum, mastic bitumen, liquid or fixed bitumen, and other terms, are simple varieties of the same mineral substance, which appear at the surface of the points of fracture in the disturbed and metamorphic regions—in other words, in the centres of dislocation of the beds." The latter part of this sentence seems to indicate that the associated rocks are sedimentary, but in other parts of the same article they are stated to be "serpentine," "euphodite," "diorite," evidently of the true igneous type.

(2) In which the containing rocks are stratified and of the primary or secondary epochs. The mode of occurrence is usually that of disseminations in the granular form throughout the entire stratum, or that of springs of petroleum, naphtha, &c., issuing from the soil, or exuding from the fissures of the beds. The bituminous limestones of France are instances of this case.

(3) Where the deposits are in formations of the tertiary age, and usually accompanied by lignite or brown coal. These are the most abundant sources of asphaltic substances, and include those of Peru, Trinidad, and of several other localities, but the descriptions are often too vague to ascertain positively to what geological group the deposits must be referred. As the Trinidad bitumens belong to this division, the theory of their origin which is here suggested is probably that by which most of the bitumens of the third series have been produced, but in the case of the first two divisions other causes may have affected the generation where the circumstances are very different.

Although commercially bitumen or bituminous asphalt is limited for its supply to only a few districts, it is nevertheless not by any means of local or limited occurrence, and this again evidently indicates that its existence is due to extensively operating natural causes, and not to any accidental combination of special agencies.

In Venezuela there are deposits of mineral pitch in the provinces of Merida and Cova and Maracaybo. Springs of petroleum are abundant in Trugillo and Cumana (Gulf of Cariaco). The soil in the vicinity of Maturin and Guarapiche is stated to be impregnated with bitumen; and with regard to the existence of the substance in the Antilles Mr. Cowling Taylor says, "The entire chain of the West India and Windward Islands present similar phenomena of petroleum spring beds or veins of asphaltum, and accumulations of mineral pitch, and traces of metamorphic and volcanic rocks in great abundance"; and he mentions especially Barbados, where compact bitumen or asphalt abounds and the calcareous rocks are frequently impregnated with bitumen.

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* A paper read before the Northern Architectural Association on February 4th, 1903.

In Cuba asphalt or chapapote is very extensively diffused. It is often termed bituminous coal, but is really on analysis found to be bitumen, consisting as it does of carbon, 34·97; volatile matter, 63·00; and ashes or cinder, 2·03.

In New Grenada bitumen prevails along the margin of the Magdalena valley.

In Peru asphaltum of typical purity occurs. The Incas used bitumen in the same manner as the Egyptians.

In the interior of Mexico are lakes of fresh water where the chapapote is found bubbling up to the surface. It has a pungent smell like that of liquid asphaltum and possesses some of its qualities.

In Texas a lake exists within a hundred miles of Houston closely resembling the pitch lake of Trinidad. It is filled with bitumen or asphaltum, and is about a quarter of a mile in circumference.

In France, at Laubsann, near Strasburg, lignite bituminous sandstone and bituminous limestone are found. Also in Seyssel (Department of Ain), Limmer, Auvergne, Puy de la Bouriere, Puy de la Sede, and in Sicily.

In Portugal a mine of asphalt of good quality has been discovered in the neighbourhood of Alcobaça.

In Syria asphalt or bitumen is in great abundance on the shores of the Dead Sea. It is black in colour and in fracture closely resembles ordinary pitch. In other essentials it seems to resemble the chapopote of Cuba. There is also a deposit of bitumen in Mount Lebanon, in rocks probably of volcanic origin.

In the provinces of Shirran and Daughestan in the Caucasus there is a great abundance of naphtha, especially on the promontory of Baku, and an extension of this formation exists in the peninsula of Kertch in the Crimea, and there is also a bituminous formation on the peninsula of Taman. Bitumen and petroleum are also very abundant in Arabia in strata wholly composed of oceanic animal matter, and sometimes exuding from fissures and abrupt declivities caused by the intense heat of the climate.

In all the countries bordering on the Tigris and Lower Euphrates, and also at Koordistan in Persia, bitumen, petroleum and naphtha are found, and in the Birman Empire and China it is also said to be found, although the details are not ascertained.

The bitumen of commerce may be conveniently divided under two heads, one of which we shall term asphalt, which is really a bituminised limestone containing from 7 to 20 per cent. of bitumen, and bitumen which is wholly free from foreign substances.

Of the first of these the qualities which are best known and being used to any extent in Europe are Val de Travers, Seyssel, Sicily, Chieti (in the Abruzzia), Auvergne, Laubsann and Limmer, and all these are known to be actual natural rock asphalts.

In America comparatively little has been done with these materials, as most of the so-called asphaltum pavements there are made of Trinidan bitumen artificially mixed in certain proportions with sand or limestone; some of these pavements have been very successful.

The method of obtaining this bituminous limestone or rock asphalt is by mining, and the seams are of varying thicknesses from very narrow streaks to 6ft. and 10ft. deep. It is found between two layers of white hard limestone either totally unimpregnated with bitumen or else with mere traces of it, which have the appearance of thin smoke or the faint stains in white marble. Sometimes, however, layers of sand and marl are found which have to be propped or held up by rubble. The workings of the Fonticelle Mine in Italy, the property of the Neuchatel Asphalt Co., Ltd., are subterranean; from this mine comes the famous Val de Travers brand of asphalt.

COMPOSITION OF ROCK ASPHALTS
(DURANT CLAYE).

—	Val de Travers (Switz).	Laubsann (Alsace).	Seyssel (Ain, France).	Maestu (Spain).	Ragusa (Sicily).
Water & volatile matter.	0·35	3·40	0·40	0·40	0·80
Bituminous matter.	8·70	11·90	9·10	8·80	8·85
Sulphur (free or in organic combn).	0·08	4·99	—	Trace	—
Iron pyrites -	0·21	4·44	—	—	—
Alumina and iron oxide.	0·30	1·25	0·05	4·35	0·90
Magnesia -	0·10	0·15	0·05	3·85	0·45
Lime - -	49·50	38·90	50·50	5·70	49·00
Carbonic acid -	40· 6	31·92	39·80	8·15	39·40
Combined silica.	—	—	—	11·35	—
Sand - -	0·60	3·05	0·10	57·40	0·60
	100·00	100·00	100·00	100·00	100·00

At the company's works the rock is treated so as to be formed into compressed asphalt or comprime and mastic, the two forms in which it is used for the formation of roadways and pavements. For the purposes of the manufacture of the compressed asphalt the rock is received from the mines in blocks of irregular shape, which are first subjected to a crushing process in a steam crusher and broken to the size of walnuts. The material is then passed on to a machine called a disintegrator, which reduces it to powder. The powder issuing from the disintegrator is received on an inclined screen which allows the fine powder to drop through, while any grains too large for the meshes are carried over and conveyed back to the disintegrator to be re-ground. The powder thus obtained is deposited in a covered shed; when required for use it is heated in slowly-rotating cylinders (very much like a large coffee roaster) over a fire of wood or coal until it reaches the right temperature for laying; this process takes two or three hours. The object for heating is twofold: (1) to evaporate moisture, (2) to bring the bitumen into such a condition that it may exert the maximum of binding power when subjected to compression by the rammers. If any portion is overheated the bitumen is fused; if underheated, the asphalt will not be thoroughly consolidated; hence the utmost care is needed in regulating the temperature, which varies for different kinds of asphalt, since some asphalts will bear a greater heat than others without deteriorating The extreme limits are, say, 250 to 300 degs. Fahr.

The mastic which is supplied in blocks, known as Val de Travers or other mastic, is manufactured by pulverizing the natural rock in exactly the same manner as for the compressed asphalt; it is then heated in boilers, and from 5 to 10 per cent. of refined bitumen is added, and the whole mass reduced to a mastic or thick liquid state. This is run into moulds, and when cool again consolidates into a hard elastic block, which is used in varying proportions with grit and refined bitumen for laying pavements.

In the laying of roadways with the comprime the method adopted is as follows:—The roadway is formed with a bed of good Portland-cement concrete, and evenly finished off to the precise contour of the roadway required. When this concrete has become thoroughly set, and become hard and dry, the powder, which has been previously cooked, is brought to the site whilst hot; and as asphalt in bulk retains the heat undiminished for several hours it can be easily conveyed in properly constructed carts from the cookers to the site, where it is spread and raked over to a uniform thickness, usually two-fifths to three-fifths more than the depth of asphalt prescribed for the finished road. The compression of the powder thus spread is effected by men with iron rammers, which have been previously heated in a fire to about the same temperature as the asphalt powder. After this has been accomplished and the mass reduced down to the finished thickness, the final smoothing is done by an iron instrument of curved form heated to an extent sufficient to soften the bitumen at the surface of the asphalt, and thus gives a fine finish and a glassy appearance to the whole. The work is then complete, and as soon as it is cooled to the temperature of the atmosphere the road can be thrown open to traffic. It can easily be seen that the whole operation of laying is one that calls for much special skill and practical dexterity for its efficient performance. Roadways thus formed are very good, being nearly noiseless, cleanly, impermeable to moisture, diminish to the utmost the force required for traction, and are durable.

In the laying of the mastic quite a different process is required. The mastic cakes, which are hexagonal, are manufactured at the works at Travers, and sent in this form to the site to be covered. These blocks are broken into pieces as big as a man's fist, ready to be thrown when required into the heating apparatus in which the mastic is cooked. This apparatus, commonly called a street pot, consists of two parts. There is first the mantle, a round envelope of sheet-iron furnished with a chimney and a small door opposite it for firing, the upper and lower rims being strengthened with iron bands; and this frame forms the furnace in which the fire is kindled. The second part is the kettle proper, a round pot of strong iron with a steel bottom, destined to receive the mastic; this pot hangs on the upper rim of the mantle by the flange, descending into the furnace for a little more than half its depth, but high enough to allow the flames of the fire to play all round it. The best fuel for heating the whole surface of the pot, thus giving uniformity to the melting, is peat or hardwood. Sometimes coke is used, but it should be avoided if possible, as it is apt to burn the bottom of the pot and thus tends also to burn the bottom mastic.

Before lighting the fire a small piece of bitumen (half the required proportion) should be placed in the bottom of the pot, and, as soon as the fire has been lighted, the broken pieces of mastic placed on the top of it until the pot is a little more than half full; the cover should then be put over the top and the mastic allowed to stand for twenty minutes to half an hour, the fire being well kept up. During this time the materials should be watched, and as soon as the mastic commences to melt the cover should be removed and the mass stirred with a long stirrer.

This stirring process finished, the remainder of the mastic should be put in, followed by half the remainder of the bitumen, filling the kettle to the top; again the cover should be put on and a steady fire kept up. When the mastic round the edges gives signs of melting it should be stirred constantly; when the whole mass has become pasty and soft, half the required proportion of fine sharp grit should be added with the remainder of the bitumen, spreading the grit evenly over the top.

The proportion of materials generally used in cooking the mastic are as follows:—

Twelve blocks of mastic, say	640 lbs.
Refined bitumen - -	39 „
Sharp grit (free from loam) -	335 „

The proportion of grit should of course be varied according to the aspect of the street where the mastic has to be laid. Where it is exposed to the heat of the sun for any considerable portion of the day more grit and less bitumen should be used in mixing. It is an indication that the material is cooked when jets of blue-coloured smoke ascend from the surface; another and most frequent test is that of thrusting a stick into the mass, and if it comes out clean and the mastic does not adhere to it, the material may be considered cooked. This cooking process takes from four to six hours.

The material being ready for spreading, the mastic is taken out of the pot and put into a wooden pail, which is passed to the man who is termed the spreader, and he empties the contents with a sweeping motion across the path. He then spreads the material with a wooden float to the required thickness. It is essential in putting down this material that the second pailful should overlap the first whilst hot, and so on with each successive layer. If the surface on which the mastic is laid is at all damp blisters will form in the mastic, and it is the business of the man who follows the spreader to prick them with a sharp piece of wood and rub the holes made until the blisters disappear. Sometimes he will also come across a burnt piece of mastic (caused by imperfect or insufficient stirring); this must be thrown out at once and hot mastic rubbed into the hole.

It will be again noted that in this mastic a great deal depends upon the method of preparation and laying and the quality of the bitumen used, as any omission of care and skill will render the asphalt when laid inferior and not able to fulfil its purpose.

The manufacture and use of the foregoing kinds of natural rock asphalt are almost limited to Europe, as in America the principal street-paving is done with an artificial rock asphalt composed of Trinidad bitumen and sand and other aggregate in the following proportions:—

Bitumen - - - - -	12·38
Organic matter - - - -	·65
Mineral matter, sand and other aggregate - - - -	86·97
	100·00

The principal contractors are the Barber Asphalt Co., and more than 40 million sq. yds. of it have been laid in the United States with satisfactory results. It is further claimed by the American manufacturers that it is better than the natural rock, as the addition of the sand makes it as a road pavement less slippery than the natural rock asphalt. The bitumen thus used is obtained from the famous Pitch Lake at Trinidad. A description of this lake is given in Charles Kingsley's book "At Last," where, having landed at the La Brea point, he says: "As we went onward up the gentle slope (the rise is 138ft. in rather more than a mile), the ground became more and more full of pitch and the vegetation poorer and more rushy, till it resembled on the whole that of an English fen. The plateau of pitch now widened out, and the whole ground looked like an asphalt pavement, half overgrown with marsh loving weeds, whose roots feed in the sloppy water which overlies the pitch. But as yet there was no sign of the lake. The incline, though gentle, shuts off the view of what is beyond. This last lip of the lake has surely overflowed and is overflowing still, though very slowly. Its furrows all curve downward, and it is, in fact, as one of our party said, 'a black glacier.' The pitch, expanding under the burning sun of day, must needs expand most towards the line of least resistance, that is, downhill; and when it contracts again under the coolness of night, it contracts, surely from the same cause, more downhill than it does uphill; and so each separate particle never returns to the same spot whence it started, but rather drags the particles above it downward towards itself. At least so it seemed to us, and may be likened to a caterpillar, or rather caterpillars innumerable, progressing by expanding and contracting their rings, having strength enough to crawl downhill, but not strength enough to crawl back uphill again.

"At last we surmounted the last rise, and before us lay the famous lake—not at the bottom of a depression as we expected, but at the top of a rise, whence the ground slopes away from it on two sides and rises from it very slightly on the two others. The black pool glared and glittered in the sun. A group of islands, some 20yds. wide, were scattered about the middle of it. Beyond it rose a noble forest of Moriche fan palms; and to the right of them high woods with giant mombins and undergrowth of cocorite—a paradise on the other side of the Stygian pool.

"We walked, with some misgivings, on to the asphalt, and found it perfectly hard In a few yards we were stopped by a channel of clear water, with tiny fish and water beetles in it; and looking round, saw that the whole lake was intersected with channels, so unlike anything which can be seen elsewhere that it is not easy to describe them.

"Conceive a crowd of mushrooms, of all shapes, from 10ft. to 50ft. across, close together, side by side, their tops being kept at exactly the same level, their rounded rims being squeezed tight against each other; then conceive water poured on them so as to fill the parting seams, and in the wet season, during which we visited it, to overflow the tops somewhat. Thus would each mushroom represent tolerably well one of the innumerable flat asphalt bosses, which seem to have sprung up each with a separate centre, while the parting seams would be of much the same shape as the asphalt, broad and shallow at top, and rolling downward in a smooth curve till they are at bottom mere cracks from 2ft. to 10ft. deep. The oil, they say, which the asphalt contains when it first rises, evaporates in the sun, of course most on the outside of the heap, leaving a tough coat of asphalt which has generally no power to unite with the corresponding coat of the next mass.

"We pushed on across the lake over the planks which the negroes laid down from island to island. Some meanwhile preferred a steeplechase with water jumps. So, whether by bridging, leaping or wading, we arrived at last at the little islands, and found them covered with a thick low scrub. Passing these little islands, which one said (I know not how truly) changed their places and number, we came to the very fountains of Styx, to that part of the lake where the asphalt is still oozing up. As the wind set towards us, we soon became aware of an evil smell — petroleum and sulphuretted hydrogen at once—which gave some of us a headache. The pitch here is yellow and white with sulphur foam, so are the water channels, and out of both water and pitch innumerable bubbles of gas arise loathsome to the smell. We became aware also that the pitch under our feet was soft. What we did see is that the fresh pitch oozes out at the lines of least resistance, namely, in the channels between the older and more hardened masses usually at the upper ends of them, so that one may stand on pitch comparatively hard and put one's hand into pitch liquid, which is flowing softly out, like some ugly fungoid growth, into the water. One such pitch fungus had grown several yards in length in the three weeks between our first and second visit.

"In one of the star-shaped pools of water, some 5ft. deep, a column of pitch had been forced perpendicularly up from the bottom. On reaching the surface of the water it had formed a sort of centre table 4ft. in diameter, but without touching the sides of the pool. The stem was about a foot in diameter. I leaped out on this table and found that it not only retained my weight but that the elasticity of the stem enabled me to rock it from side to side. Pieces torn off the edges of this table sank rapidly, showing that it had been raised by pressure and not by its buoyancy. Strange, though true; but stranger still did it seem to us when we did at last what the negoes asked us, and dipped our hands into the liquid pitch to find that it did not soil the fingers. The old proverb, that one cannot touch pitch without being defiled, happily does not stand true here, or the place would be intolerably loathsome.

"In five minutes we had seen, handled and smelt enough to satisfy us with this very odd and very nasty vagary of tropic nature; and as we did not want to become faint and ill, between the sulphuretted hydrogen and the blaze of the sun reflected off the hot black pitch, we hurried on over the water furrows and through the sedge beds to the further shore, to find ourselves in a single step out of an inferno into a paradise."

At the bitumen factory at Trinidad, what is called epuree is made, this being merely the raw bitumen partly refined, so that it may be more conveniently shipped.

The whole of the lake is the property of the British Government, and was at one time leased out to various small firms, who had a right of digging out the bitumen, paying to the Government a royalty of so much per ton. But some time ago all these leases passed into the hands of American capitalists, who made arrangements with several firms in Europe and America to supply them with whatever bitumen they required and, further, to avoid undue competition, arrangements were entered into whereby the bitumen for different uses was put into the hands of different firms. This lake of pitch proper is about 100 acres in extent, and is believed to be almost inexhaustible, and the asphalt taken from it is applied to various purposes; a large portion of it is used for laying pavements, for damp-coursing, cellar or basement flooring, flat-roofing, bridge-building, both for waterproofing and traffic, and to stop vibration in engine foundations, culverts, tunnels and subways. Electricians find it the best and most effective insulator known. It is elastic, and used in various circumstances where rigid cements fail, and wherever allowance has to be made for expansion and contraction. It is also employed in the manufacture of marine glue, and in its most highly refined state is made into wafers for fastening the tips on billiard cues. The quantity of bitumen obtained from this source last year was over 100,000 tons, and still there does not appear to be any substantial diminution in the lake.

The great value of bituminous asphalt lies in its elasticity, and instances are many where serious vibrations caused by the working of heavy machinery have been altogether stopped by putting in foundations of bituminous concrete instead of the ordinary rigid Portland-cement concrete. About the year 1880 an English gentleman, who was connected with the asphalt industry, endeavoured to manufacture a material to be used for the purpose of stopping vibration, preventing the action of dampness and for waterproofing purposes. It was found that although the ordinary mastic had a certain amount of elasticity due to the presence of the bitumen, where it was used as a damp-course in walls where subsequent settlement took place the asphalt also was broken owing to its brittleness when set. He therefore reverted to the use of the refined bitumen run on to bagging, and this material is now known as pure bitumen damp-course. A modification of this material is less than ¼in. thick, and is composed of pure Trinidad bitumen. The advantages claimed for it are that the maximum of elasticity and of

COWPER'S HOUSE AT OLNEY. DRAWN BY HERBERT NORMAN.

damp-resisting properties is obtained, and that therefore as a damp-course it will not crack on any settlement of the building taking place; and moreover as the material is prepared before leaving the works, the possibility of it being non-effectual owing to dampness existing in the work on which it is to be laid is obviated.

You will remember the amount of care which is necessary in the preparation of bitumen mastic placed *in situ*, and how everything depends on there being no dampness on the site to be covered and no overcooked or undercooked mastic being put in; it is therefore perfectly obvious that the claims of the sheeting over asphalt laid hot or run into walls is thoroughly maintained. I understand that this material has to-day a world-wide reputation, and has been extensively used by the most eminent engineers and architects in this country. Messrs. G. M. Callender & Co. are the sole manufacturers of bitumen in this form.

They also manufacture a somewhat stouter material known as pure bitumen sheeting. This is mostly used for lining ponds, tanks, reservoirs, culverts, sewers, covering bridges, arches, and for rendering basements watertight; and another of the advantages claimed for the bitumen in this form is the comparatively easy method of jointing the various sheets together.

The sheets are laid out flat upon the surface to be covered and the edges lapped about 2in. The layer, with a steel brush, first cleans off the paper and any chalk which may remain on the top edge of the under sheet and the bottom edge of the upper sheet. He then takes a hot iron and goes over these two edges in order to make the bitumen plastic; the two edges are then brought together and properly pressed; the top outside edge is then sealed and the joint is complete.

In securing the brick or concrete lining of a tank or inside walling to the wall behind, one-half of the tie is first built into the main wall; the sheeting is then laid on the face and the bolt driven through to the front; the other portion of the tie is then put on, and after being well caulked with liquid bitumen is screwed up tight; the inside brickwork or concrete is then built, and thus an efficient tie is maintained between the two portions of brickwork or concrete in the wall.

Mr. George Bransby Williams, A.M.I.C.E., read a paper on the subject before the Institution of Civil Engineers in 1898. Speaking of the water supply of the town of Whitby, he says:—

In the valley on the site of a small marshy lake known as Randymere, a storage reservoir, which has a capacity of 13,000,00 gals., and an area of about four acres, was constructed in 1884 by building two earthen embankments at a distance of 300yds. apart. As soon as the reservoir was completed and filled, a considerable leakage was discovered through the joints of the surrounding sandstone. It was impossible to determine its exact position, but it was evident that a large proportion of the water made its way through the narrow ridge separating the reservoir from the main valley, thus giving rise to springs in the low side. The total leakage when the reservoir was full amounted to 250,000 gals., and when half full to 110,000 gals. per day; an attempt to stop the leaks by sinking a puddle trench along the north-east side proved unsuccessful. In 1894 Mr. James Mansergh, past-president of the Institution of Civil Engineers, was called in to advise the company, and he recommended that the only method to make a thoroughly satisfactory repair of the reservoir was to line it throughout with watertight material. It was eventually determined to use pure bitumen sheeting, sandwiched between two layers of concrete. The concrete was laid 9in. thick over the whole of the bottom, but the thickness of the two layers varied. The top layer was 4in. thick on the sides and 3in. thick on the floor, the bottom layers being thus 5in. and 6in. thick respectively. The bituminous sheeting consisted of specially-woven canvas steeped in bitumen and passed through rollers so as to be about $\frac{1}{8}$in. thick. It was laid by the manufacturers' own men in lengths of 24ft. by 6ft. wide, the sheets being allowed to overlap 3in. at the joints. Red-hot irons were run along the upper edge of the lower sheet and the under edge of the overlapping sheet; the joint was then pressed down and the hot irons were run along the top. Finally the joint was sealed with melted bitumen, and the sheeting when laid in this way made a thoroughly strong watertight lining. The work was finished by the middle of September, 1898, and the final filling was commenced early in November. By the beginning of December the reservoir was full. It was then found to be perfectly watertight.

The general conclusions which may be gathered from the foregoing facts are—

Firstly: That bitumen is a mineral which was well-known to the ancients as a water-resisting material.

Secondly: That its great advantage lies in its elasticity and its power of adapting itself to any ordinary conditions of settlement.

Thirdly: That being a natural mineral it is not affected by atmospheric influences.

And fourthly: It is very obvious that the purer the bitumen used the more permanent and effective will be the work, and it therefore seems to me that for architectural and engineering purposes in resisting dampness and the passage of water the best form is that of sheeting.

Cowper's House at Olney (a sketch of which by Mr. Herbert Norman, of Northampton, is reproduced on this page) is now a national property and contains the relics of the poet, who died on April 25th, 1800.

The Embassy at Washington to be enlarged.—England has bought, as the site of the new Embassy, the Oaklawn Estate of nine acres, which was under consideration for a new White House before the renovation of the historic Executive Mansion was decided upon instead. France, Russia and China are also enlarging their Embassies upon a scale commensurate with their new dignity since their Ministers became Ambassadors, but none approach England's plans in stateliness.

Law Cases.

Underground Pipe from Two Houses a "Sewer."—The case of *Silles* v. *Fulham Borough Council* recently came before the Court of Appeal. It concerned two houses in Fulham built in one block, with a gutter running along under the eaves, which carried a portion of the rainwater from the roofs of both houses into a down-pipe, into which also flowed the slops and bath water of one of the houses. The down-pipe discharged into a gulley and thence into an underground pipe which communicated with a main sewer. The question was whether this pipe was a drain or a sewer.—The Court dismissed the appeal.—Lord Justice Vaughan Williams said the facts were substantially identical with those in the two cases of *Holland* v. *Lazarus* and *Geen* v. *Vestry of St. Mary, Newington*, in which it was held that where two drains carrying sewage matter, which ran into one another and served two buildings and not a block of houses drained by a combined operation sanctioned by the vestry, those two drains so running into one another came to be a sewer within the meaning of the definition of "sewer" in section 250 of the Metropolis Management Act, 1855. And it was further established that it made no difference if one of the two drains happened to be a drain which only carried rainwater; such a case came equally within the definition.

Light and Air.—At the Lambeth Police Court the Camberwell Borough Council, proceeding through Mr. C. H. Kerslake, one of their sanitary inspectors, recently summoned Mr. Robert Briant, the owner of a house in Harris Street, Camberwell. In form, the summons was to obtain an order to abate a nuisance, but in substance the point was whether the owner of a house built long prior to the passing of the Public Health (London) Act could be compelled to make a structural alteration in it to the extent of putting a skylight in the roof for the purpose of lighting and ventilating a staircase and landing alleged to be dark and unventilated. Mr. Hopkins, in delivering judgment, said the defendant's houses were tiny houses in a mean street; but they were in very good order and repair, and could not be considered a "nuisance" according to the Public Health Acts. He was also of opinion that the premises were not in such a state as to be injurious or dangerous to health. He therefore dismissed the summons, and allowed the defendant £5 5s. costs.

R.I.B.A.

FOUR MODERN HOSPITALS.

A MEETING of the Royal Institute of British Architects was held on Monday evening at 9, Conduit Street, W., the chair being occupied by the president, Mr. Aston Webb, A.R.A. The secretary announced the decease of Messrs. E. Birchall (Fellow), F. Edwards (Fellow), Young Bolton (Associate), R. Philip Day (Associate) and Col. John Davis (Hon. Associate); and the election as Fellows of Mr. John Woolfall and Mr. Joseph Swarbrick, presidents respectively of the Liverpool Architectural Society and the Manchester Society of Architects.

Mr. Edwin T. Hall, F.R.I.B.A., then read a paper on "Four Modern Hospitals."

The hospitals were (1) the City of Leeds Fever Hospital at Seacroft; (2) the City of Leeds Smallpox Hospital at Killingbeck; (3) the Sanatorium at Frimley, in Surrey, for the Brompton Consumption Hospital; (4) the Camberwell Infirmary.

Before dealing with his examples, the lecturer made some general observations on each type of hospital. No hospital on a rural site should be more than two storeys in height. In all the best modern examples of hospitals the main wards are placed with their axes north and south, when this is practicable, with windows on both sides and at the ends. Thus every bed and every wall gets all the sunlight there is during some part of the day. Double wards—that is, wards with a central wall and rows of beds on each side of it—should always be avoided. For consumptive sanatoria, as distinct from hospitals, large wards are not adopted; the ideal is a single room for each patient, with a southerly aspect, in a building not more than two storeys in height. On a city site, where relatively high buildings are a necessity, three or more storeys are suitable; and lifts and thoroughly aërated staircases for access and for fire escape must be provided.

The City of Leeds Fever Hospital

at Seacroft, about three miles from the centre of the city, consists of forty-two separate buildings. Accommodation is normally provided for 452 patients, but in cases of emergency a much larger number can be received. Attached to the hospital is a quarantine station of many cottages, to which infected families are removed until danger is past.

The administrative buildings consist of (1) the offices, with residence for the matron, for the assistant medical officers, and for resident porters and others; (2) the nurses' home, containing 121 rooms; (3) the female servants' home, with eighty-four rooms; (4) dining-rooms for nurses and servants between the homes and the kitchen; (5) the hospital kitchen, steward's stores, dispensary, staff consultation rooms, sewing-room, &c.

Every part of the hospital is connected by glass-covered open ways, with subways beneath for steam, hot and cold water, and gas pipes, electric mains, &c. The hospital pavilions are grouped in pairs, with fuel store and nurses' lavatories common to both on the cross corridor. Beneath these staff offices is the heating chamber. Each pavilion is axially north and south, with windows on both sides and at the ends. It has an entrance hall with the duty-room opening from it. To right and left are large wards, each containing fourteen beds, and opening from these are single-bed wards, all overlooked from the duty-room or ward kitchen. Each large ward has a wide balcony at the extreme end, flanked and sheltered by the towers, containing bathrooms, lavatories, and water-closets, and near these is an external flight of steps leading to the ground. Beneath every pavilion is a paved open basement, about 5ft. or 6ft. high, forming an aërial disconnection of the wards from the earth. In this all pipes and cables are placed, so that repairs can be done without coming inside the building. The smoke flues are also swept from beneath. The ward floors are of polished teak laid direct on the concrete. The walls are of cement, painted and varnished to match the faïence chimney-pieces. The heating is by passing fresh air over hot-water radiators at a calculated low velocity, so as always to be changing the atmosphere of the room, and this is done completely three times an hour. The extraction is by fire and aspirating flues. Heating, the lecturer considered, should never be done by pipes laid in channels with gratings over. These become receptacles for dust and filth of all kinds. The ventilation of the hospital was secured by natural as opposed to artificial means, such as that usually called the Plenum system. In the lecturer's judgment, the latter was a mistake in any hospital. The windows, consisting of a pair of sashes and a fanlight with glass spandrel cheeks, extend to the ceiling. The isolation pavilions, of which there are four, consist of wards of one, two and four beds each, with nurses' rooms and special sanitary accessories for treating different diseases. In each of the diphtheria pavilions there is an operating room with side and top light. The block for severe operations contains an anæsthetic lobby, a theatre and a sterilising room. The staff quarters have everything necessary for comfort. The hospital kitchen is a room 50ft. long, with a large scullery attached. Close by is a large bakery, and there is a group of larders facing north and arranged with through currents of air. The steward's store is 60ft. 6in. by 25ft. 7in., with a gallery round. From this centre enclosed trolleys convey food and stores to all parts of the hospital. Describing the drainage and treatment of sewage, the lecturer drew attention to the sewage irrigation outfall, from which it is necessary to exclude typhoid germs, and showed drawings of an apparatus devised by himself for dealing with these germs. It consists of receiving tanks and boilers for alternate use. The typhoid sewage is received and boiled by steam, after which it passes to cooling beds, and thence to the outfall sewer.

Killingbeck Smallpox Hospital

is situated on the top of a hill with undulating country all around. The hospital buildings proper are grouped together on the summit of the site, the offices and medical quarters being in the centre, the laundry and mortuary to the west, the discharge block to the east, all outside the hospital road. Entering in the centre, the nurses' and female servants' homes respectively are to the west; the kitchen and stores, dispensary and serving-room to the south; the male servants' home to the east. Beyond to the north lie three large pavilions and two isolation blocks. The mortuary has no visiting-room for friends to view their dead, but it has, under a peristyle, a plate-glass sarcophagus, into which the body, suitably dressed, is placed from the mortuary on a rolling bed.

The Frimley Sanatorium

for the Brompton Consumption Hospital was next described. Here the author said he had tried to get away from the hospital, to suggest breeziness and health and the pleasant atmosphere of a large home. The institution consists of sixteen buildings. The patients' block is cross-shaped, with accommodation for eighty-eight patients in four two-storeyed radial pavilions, and for twelve in the centre, where special cases may be under closer surveillance. Every patients' room faces S., S.S.E. or S.S.W. His first design was for putting the eighty-eight patients in single rooms; but this was overruled. For the King's Sanatorium, however, his original plan was shown to his Majesty and to Sir Ernest Cassel, and the Committee came to the same conclusion as that he originally contemplated. As regards concentration, which in Germany was carried to an extreme, the lecturer said he had tried to find a mean. At Frimley they had 100 patients all within a radius of 195ft. from the doctor's consulting room and matron's sitting-room, and yet every room has an open outlook; all are away from noise and bustle, all have the greatest amount of sun, and all are sheltered. Another advantage of the plan was that ample classification could be got. They could have units of twenty-five males or females, with their separate group of closets, bathrooms and lavatories, or they could arrange convalescents by themselves or make other divisions of patients in units of eleven. There was but one dayroom on each floor. The great aim is to get the patients out into the open air for their recreation, not to encourage them to remain within. Provision is made by which beds can be wheeled out on to the terrace, and at each extremity of the pavilions there is a sunroom formed in a turret for patients in the end ward, in addition to a balcony. As regards roofs to terraces and balconies, the lecturer's idea of rolling-canvas shop-blinds had been adopted. These could be lowered or rolled up at will.

Camberwell Infirmary,

Brunswick Square, although technically a parish infirmary, is, owing to its position, really a general hospital, dealing with accident and acute cases of all kinds. The original building in Havil Street the lecturer was altering and modernizing to form part of the larger institution. It consists of twenty-one buildings, standing on a site of $4\frac{1}{2}$ acres, practically surrounded by roads, and all buildings are connected by glass-covered ways and subways. It accommodates 800 patients, has a resident staff of five doctors, while the other officials, nurses and servants number about 160. The new pavilions are axially north and south. The pavilion to the north — which may be taken as typical of all—consists of three main storeys and a fourth one over part of the area. It has at the home end a wide staircase, with walls of glazed brick from bottom to top. At the other end it has a secondary or escape staircase, extending from the flat roof to the road, in what is practically a separate tower. There are three exits from the building. On each floor there is a ward of twenty-four beds, with windows on three sides, and other wards of six, four and two beds respectively, affording opportunity for great classification. There is a ward kitchen. This and the corridors have also all their walls of glazed brick. There is only one fireplace in each ward for cheerfulness, the heating proper being by hot water. The large ward on the top floor has been specially designed for consumptive patients, and is a unique provision for a general hospital. Practically the whole of the enclosures on three sides consist of opening windows for open-air treatment, and above is a flat roof on which patients may spend all the day with something of interest to see in the panorama stretching across London. Three of the pavilions are so designed. One of the greatest modern improvements in hospitals is the superior accommodation now given to the staff. The female staff home at Camberwell Infirmary is situated in the central quadrangle, with a pleasant garden attached.

A discussion followed in which Messrs. Hugh Stannus, R. F. Chisholm, Thomas Blashill, Wilson, Angel, Hopkins, Hilton Nash, Osborne Smith and the president took part.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Buildings to Measure near Manchester.

ROCHDALE. — DRAUGHTSMAN writes: "(1) Are there any buildings within four or five miles of Manchester suitable to measure for the R.I.B.A. intermediate examination? (2) Do you think the drawings on plate 24 of Spiers's 'Orders' would be accepted for the sheet of Classic ornament?"

(1) The buildings in the neighbourhood of Manchester have been enumerated several times recently in the BUILDERS' JOURNAL. (2) It is quite permissible to copy the sheet of details referred to, but it is better to obtain a cast, say, of the Erechtheum frieze from Bruciani Brothers, Drury Lane, W.C., and, better still, to work direct from the marbles in the British Museum. G. A. T. M.

Size of Joists for Floors.

ILFORD.—FLOORS writes: "What should be the size of r.s.js. to use for a fire-resisting floor of 9ft. 9in. span between main girders, and the distance apart? The floor will be composed of coke-breeze concrete in the proportion of 7 to 1."

The kind of building should have been mentioned, or the use to which the floor is to be put, in order that some idea might be formed of the proper working load to allow for; also the span of the main girders should have been stated to determine the proper spacing of cross joists. A proportion of 7 to 1 for a coke-breeze concrete floor is not strong enough; 5 to 1 is much more suitable. Assuming the latter with a depth of 6in., and an external distributed load of 1½ cwt. per ft. super., the rolled joists might be 4¾ × 1¾ × 6½ lbs. per ft. run, which would carry 28 cwt. distributed. Then the span being 9ft. 9in., the distance apart will be $= \frac{28}{9{\cdot}75\,(1{\cdot}5 + 0{\cdot}5 \text{ wt. conc})} = 1{\cdot}436$, say 1ft. 6in., without allowing for the stiffening due to the concrete; but it is generally believed that with good materials the cross joists may be strained to double the amount when properly packed round with good cement concrete 50 per cent. deeper than the joist. This would make the width apart 3ft., but it may be checked by the special formula, allowing for extra strength due to concrete, $W = 32\,\frac{I}{L^2}$, where W = safe distributed load in tons, I = moment of inertia of section in inch-tons, L = span in feet. Then $W = 32\,\frac{6{\cdot}73}{9{\cdot}75^2} = 2{\cdot}27$ tons, but the gross load is 2 cwt. per ft. super., so that the distance apart would be $\frac{2{\cdot}27 \times 20}{9{\cdot}75 \times 2} = 2{\cdot}33$, say 2ft. 4in.; thus 2ft. 6in. apart would probably make a good safe floor. By increasing the depth of the cross joists the distance apart may be increased. For instance, if 6 × 2 × 12lb. rolled steel joists are used, they will carry 3 tons each without allowing for the reinforced strength due to concrete. The distance apart would then be $\frac{3 \times 20}{9{\cdot}75 \times 2} = 3{\cdot}077$, say 3ft., or by the above formula allowing for concrete, $W = 32\,\frac{I}{L^2} = 32\,\frac{16{\cdot}58}{9{\cdot}75^2} = 5{\cdot}6$ tons, and distance apart $= \frac{5{\cdot}6 \times 20}{9{\cdot}75 \times 2} = 5{\cdot}74$, say 5ft. 9in., or whatever shorter distance may be necessary to equalize the spacing to suit the span of main girders.

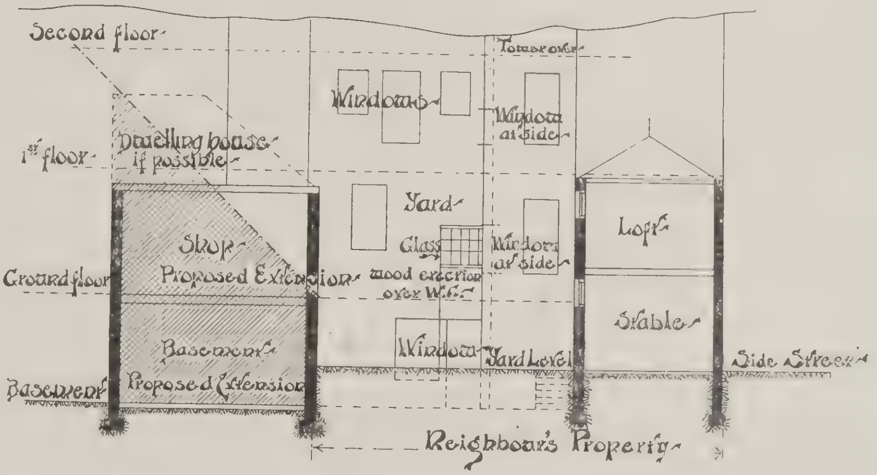
HENRY ADAMS.

Obstruction of Light.

LONDON, W.—YOUNG DRAUGHTSMAN writes: "My client proposes to build on his backyard and wants to extend his present basement and ground-floor shop (and, if possible, his house above) to the length of his stable wall. He has got the sanction of one of his neighbours and of the authorities, but his other neighbour threatens to bring an action against him if he builds, because, he alleges, his light would be obstructed. My client has been delayed for two years, and has consulted several architects, but they could give him no definite advice. The matter has finally been given to me. Can the building be proceeded with; or what provision would be necessary to give the neighbour his required legal light? Both the properties were built in 1868."

This question seems to be one of opinion and degree rather than of certainty. To build as proposed would certainly involve a slight decrease of light to the small back window of shop, the side window of tower, the window in room over shop, and the window in the small galvanized building in rear. The extent of the obstruction would, however, in no case be serious, unless the back window of shop be used for delicate work or colour-matching, so that if the building were commenced and an action brought only nominal damages would be obtained. To avoid all risk of a successful action being brought, the new building would have to be kept within the limits shown hatched on the accompanying section, and even then a solicitor should be consulted before the work is started. It is a pity that an arrangement cannot be come to in a case like this, as some risk of action must be run otherwise. Often a neighbour's objection is little more than a bluff to obtain blackmail.

G. A. T. M.



OBSTRUCTION OF LIGHT.

Building on Chalk.

BOURNEMOUTH.—W. F. writes: "I am thinking of building a house on the side of a chalk hill, overlooking and close to a rather deep railway cutting. The upper part of the chalk is largely composed of flints. Do you think there would be much vibration felt from the trains, or is the house likely to suffer? The site is rather steep. Would the flints be likely to settle?"

There will inevitably be some vibration in a house close to a railway cutting, but with certain precautions it is not likely to prove detrimental to the building, and the occupants soon become used to both the noise and vibration. The house should if possible be built so far back that an angle of 45 degs. from the nearest rail will not reach the house below the ground level, or, in other words, the horizontal distance between house and railway should be at least equal to the difference of level between the surface of the ground at the house and the rail level. This is for chalk; for other material a greater distance would be necessary. Occasionally cottages are built nearer, but it is not advisable. It would probably pay to remove the flints from the upper part of the chalk for use as road metal, or for constructing flint rubble walls, or spalled flint facing, as in many parts of Kent.

HENRY ADAMS.

Bending Moments in Beams.

CAMBERLEY.—PUPIL writes: "Let it be required to find the breaking weight of a girder 18ft. long, and loaded at two points, say, 6ft. from each end, d 14in., b 9in. and c 5in. Let W = one of the weights; then $R_1 = R_2$ these are the reactions $= \frac{W + W}{2} = W$; greatest B.M. $= R_1 \times \frac{L}{3} = \frac{W \times L}{3}$. Let W^1 = weight at centre to give the same bending moment; $W^1 = \frac{b \times d^2 \times c}{L}$; B.M. $= \frac{W^1}{2} \times \frac{L}{2} = \frac{b \times d^2 \times c}{2L} \times \frac{L}{2} = \frac{b \times d^2 \times c}{4}$. These bending moments must be equal, $\therefore \frac{W \times L}{3} = \frac{b \times d^2 \times c}{4}$, $W = \frac{3}{4} \times \frac{b \times d^2 \times c}{L} = \frac{3}{4} \times \frac{9 \times 14^2 \times 5}{18} = \frac{3 \times 49 \times 5}{2} = 367\frac{1}{2}$ cwts. at one point; total load = 735 cwts. The breaking weight of such a beam loaded at the centre would equal $\frac{9 \times 14^2 \times 5}{18} = 98 \times 5 = 490$ cwts., against 735 cwts. Does the greatest bending moment equal the breaking weight?"

The bending moment in a beam carrying two equal weights at equal distances from each end is uniform between the weights, and is equal to the reaction at either end multiplied by the distance to the nearest weight. If the beam is trisected by the two loads the bending moment will be $R_1 \times \frac{L}{3} = \frac{\frac{1}{2}WL}{3} = \frac{WL}{6}$ because the reaction is equal to one of the loads or half the total. The bending moment with a central load is $\frac{WL}{4}$; therefore, with the same total load, the stress on the material will be as ⅙ to ¼, or ⅔ to 1, or 1 to 1½, *i.e.*, the central load will stress the beam 1½ times as much as the same load divided into two parts and spaced so as to trisect the beam. The bending moment and the breaking weight are entirely separate and distinct things, and a systematic study of stresses and graphic statics should be made to enable the terms to be properly understood.

HENRY ADAMS.

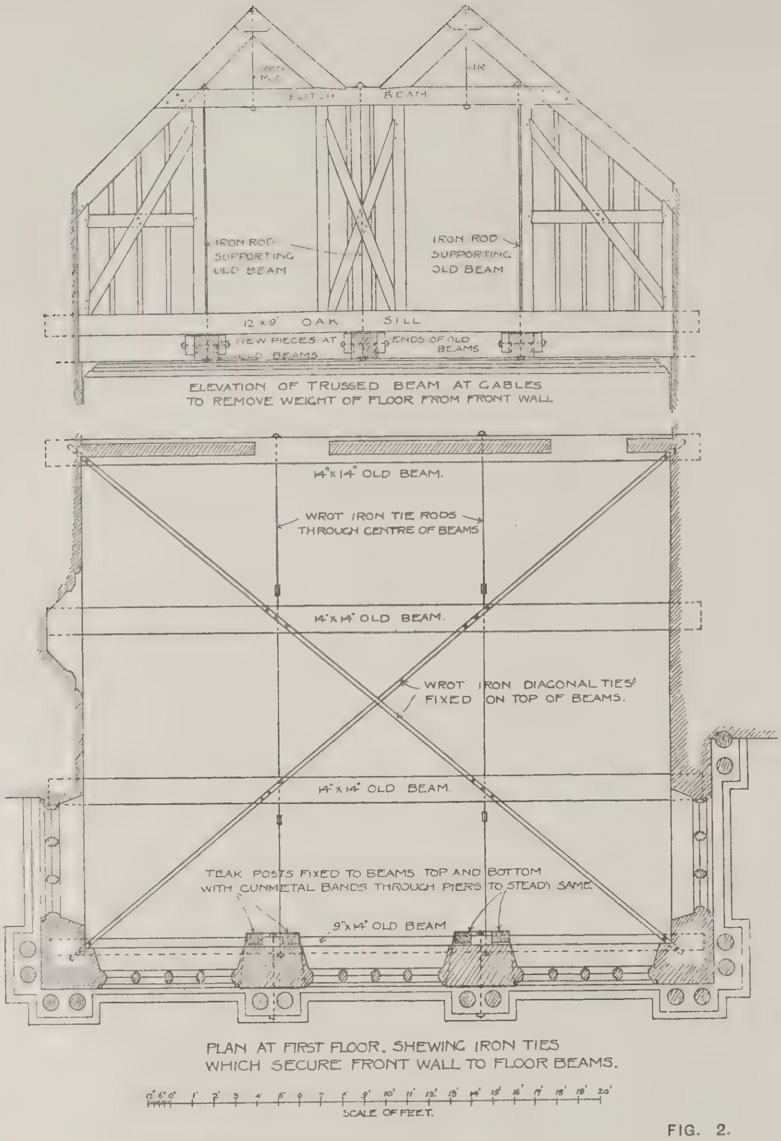

FLITCH BEAM
IRON ROD SUPPORTING OLD BEAM
IRON ROD SUPPORTING OLD BEAM
12 x 9' OAK SILL
NEW PIECES AT ENDS OF OLD BEAMS
ELEVATION OF TRUSSED BEAM AT GABLES TO REMOVE WEIGHT OF FLOOR FROM FRONT WALL
14"x14" OLD BEAM.
WROT IRON TIE RODS THROUGH CENTRE OF BEAMS
14"x14" OLD BEAM.
WROT IRON DIAGONAL TIES FIXED ON TOP OF BEAMS.
14"x14" OLD BEAM.
TEAK POSTS FIXED TO BEAMS TOP AND BOTTOM WITH GUNMETAL BANDS THROUGH PIERS TO STEADY SAME.
9"x14" OLD BEAM
PLAN AT FIRST FLOOR. SHEWING IRON TIES WHICH SECURE FRONT WALL TO FLOOR BEAMS.
SCALE OF FEET.

FIG. 2.

Views and Reviews.

Repairing Ancient Buildings.

This is a very important and timely book. Of recent years, we are thankful to say, a more conservative spirit has prevailed in the repair and restoration of old buildings, due largely to the efforts of this Society, but there are unfortunately still far too many restorations proposed each year. Restoration and renovation are words sometimes used to express merely repair, but they generally mean far more than this, and should be eliminated from the vocabulary of the clergy. It may safely be said that every building, however ancient, can be repaired and preserved for generations with all its original interest—a fact recognized by those possessing a thorough knowledge of construction and with experience of the repair of old objects, though unfortunately not often appreciated by the lay mind.

This book chiefly consists of a series of practical hints and recipes, and is very clearly written and ably put together. There is a short introduction, which discusses the ethics of restoration. If there is one general objection which can be raised against the book it is that it is compressed too much and seems rather dogmatic. The introduction hardly makes the objections to restoration strong enough or sufficiently explanatory to convince the average clergy when they are met with counter arguments.

The hints contained in the volume are especially valuable from the fact that they are founded on the practical experience of the Society. The following we heartily agree with: "There has of late years been an increasing perception among architects that the ordinary clerk of works is not the best possible director for work on ancient buildings. This feeling has resulted in some of the younger architects with a natural turn for construction undertaking the personal direction of works on the spot in conjunction with the Society; and it has proved a most satisfactory arrangement. . . . If, however, the work is carried out under the personal direction of the architect on the spot, the work is well done with the least possible loss of interest to the buildings, and at less cost than would be incurred if the ordinary methods of carrying out the restoration were adopted; for only the actual material, workmanship, and supervision would have to be paid for."

We reproduce here three illustrations from the book which show the admirable way in which the Society goes to work in preserving ancient buildings. Figs. 1 and 2 show how the Exeter Guildhall front was made secure. This work illustrates the importance of personal supervision in dealing with unexpected contingencies. It will be noticed that the beam bedded in the wall at the floor level, as shown in the section, originally gave support to the inner half of the wall, and as it was completely decayed there was danger of the wall breaking at this point, and indeed this movement was actually going on. The work which was carried out arrested the movement, and relieved the ancient front from unnecessary weight and thrust. Fig. 3 shows how cracks should be repaired. Where the new brickwork is shown, two cracks occurred through the thickness of the wall over the chancel

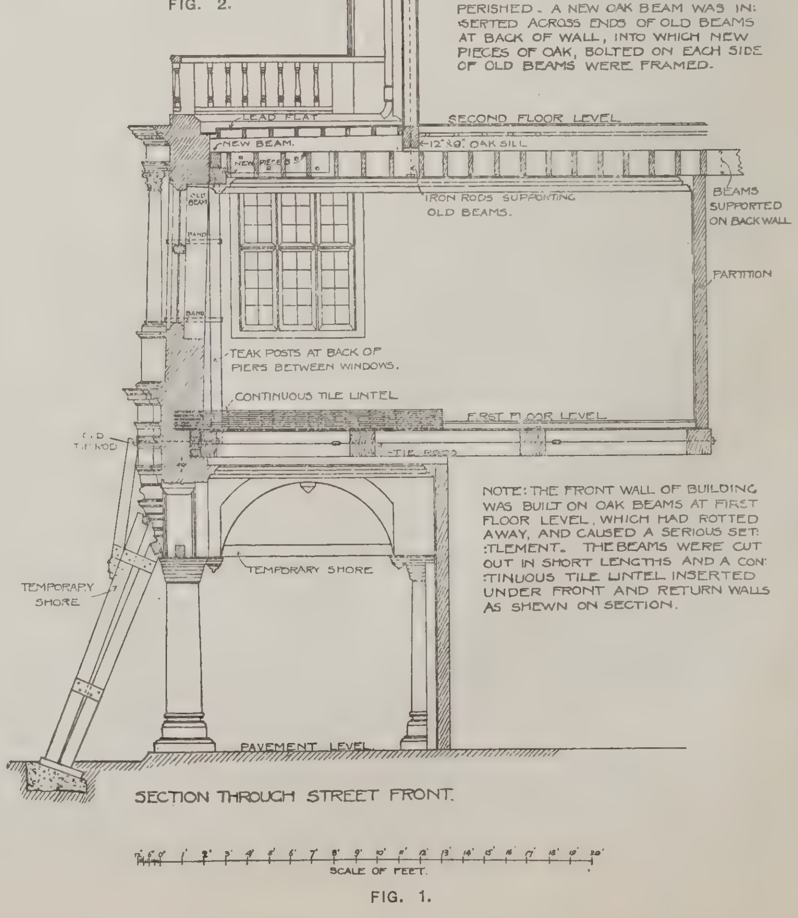

FLAGSTAFF
ROOF.
LEAD GUTTER
CABLE
FLITCH BEAM
NOTE: THE ENDS OF THE OLD BEAMS SUPPORTING 2ND FLOOR, WHICH RESTED ON FRONT WALL OF BUILDING WERE FOUND TO BE COMPLETELY PERISHED. A NEW OAK BEAM WAS INSERTED ACROSS ENDS OF OLD BEAMS AT BACK OF WALL, INTO WHICH NEW PIECES OF OAK, BOLTED ON EACH SIDE OF OLD BEAMS WERE FRAMED.
LEAD FLAT
SECOND FLOOR LEVEL
NEW BEAM.
12"x9" OAK SILL
NEW PIECES
OLD BEAM
BAND
BAND
IRON RODS SUPPORTING OLD BEAMS.
BEAMS SUPPORTED ON BACK WALL
PARTITION
TEAK POSTS AT BACK OF PIERS BETWEEN WINDOWS.
CONTINUOUS TILE LINTEL
FIRST FLOOR LEVEL
OLD TIE ROD
TIE RODS
NOTE: THE FRONT WALL OF BUILDING WAS BUILT ON OAK BEAMS AT FIRST FLOOR LEVEL, WHICH HAD ROTTED AWAY, AND CAUSED A SERIOUS SETTLEMENT. THE BEAMS WERE CUT OUT IN SHORT LENGTHS AND A CONTINUOUS TILE LINTEL INSERTED UNDER FRONT AND RETURN WALLS AS SHEWN ON SECTION.
TEMPORARY SHORE
TEMPORARY SHORE
PAVEMENT LEVEL
SECTION THROUGH STREET FRONT.
SCALE OF FEET.

FIG. 1.

arch. The cracks were cut out and the flint wall on each side well bonded together with hard bricks. In order to relieve the arch of some of the weight of the superstructure a brick lintel was inserted through the length and thickness of the wall above the arch, which acts at the same time as a tie, and bonds the wall together.

A timely warning is uttered against the rebuilding of a wall simply because it is to some extent out of the perpendicular, as it may be quite safe. The method recommended of using plaster-of-Paris or cement bands across cracks to ascertain if movement is taking place is very good. While acknowledging the advantages lias lime mortar possesses over Portland cement in general work, we do not agree that it is best in foundation work, for a foundation is called upon to resist tensile stress fairly soon, and is subject to damp, and heavy showers of rain might also seriously weaken lime. We are surprised to find the laying of hay under tiles recommended—nothing is more reprehensible. Again, we should not advise the use of galvanized cast-iron pegs. We think it is going a little too far to say that "modern stained glass is always to be regretted."

"Notes on the Repair of Ancient Buildings." Issued by the Society for the Protection of Ancient Buildings. London: Published by the Committee and sold on their behalf by B. T. Batsford, 94, High Holborn, W.C. Price 1s. nett.

Keystones.

The great Screen Organ in York Minster, which has been rebuilt at a cost of nearly £5,000, was dedicated last week.

Exeter Cathedral.—The Society for the Protection of Ancient Buildings disapproves of the proposal to remove the glass in the west window of Exeter Cathedral.

Surrey Archæological Society.—The annual report state that during last year very satisfactory progress was made with the excavations on the site of Waverley Abbey, the most interesting discovery being the finding of a second guest-house, the buttress, bases and pillars being in excellent preservation. The total membership of the Society is at present 405.

New L.C.C. Fire Stations.—Two new fire stations at Clapham and Highbury have been erected by the Works Department of the London County Council from designs by Mr. W. E. Riley, the Council's superintending architect. The station at Clapham is at the junction of Grafton Square and the old town, and has cost £13,250. That at Highbury is in Blackstock Road, and has cost about £11,500.

"Kornhalls."—Thirty-six "Kornhalls," or magazines for storing grain, have been erected by the German Government throughout the country, at a cost of about £450,000. These buildings are fitted with the most modern machinery for cleaning and treating the grain, and it is stated that they are intended to render small farmers independent of the fluctuations of the market. Advances are made upon the grain stored, so that the farmers need not be in a hurry to sell.

Motherwell Competition.—Mr. Washington Brown, Edinburgh, the assessor appointed by Motherwell Town Council to adjudicate on the plans submitted for the proposed Carnegie Library, has placed Messrs. Creig, Fairbairn & M'Niven, York Place, Edinburgh, first. That firm has been selected as architects at the usual fees by the Town Council. Second place, and a prize of fifty guineas, has been secured by Mr. Thomas T. Paterson, 5, York Place, Edinburgh; and third place and 25 guineas by Messrs. J. N. Scott & A. Lorue Campbell, 44, Queen Street, Edinburgh. The building is to cost about £9,000.

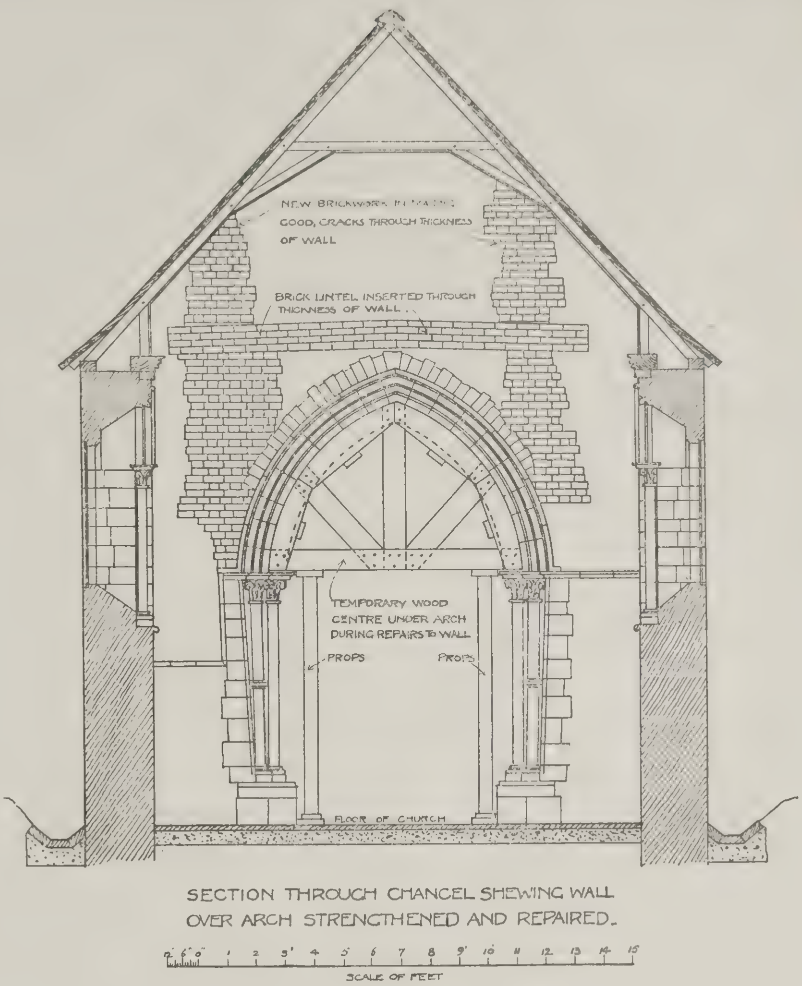

NEW BRICKWORK IN MAKING GOOD, CRACKS THROUGH THICKNESS OF WALL
BRICK LINTEL INSERTED THROUGH THICKNESS OF WALL.
TEMPORARY WOOD CENTRE UNDER ARCH DURING REPAIRS TO WALL
PROPS
PROPS
FLOOR OF CHURCH
SECTION THROUGH CHANCEL SHEWING WALL OVER ARCH STRENGTHENED AND REPAIRED.
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
SCALE OF FEET

FIG. 3.

A Memorial Tablet bearing the names of forty-three Marlburians who fell in the South African War has been placed in Marlborough College. It was designed by Mr. G. F. Bodley, R.A.

The late Prof. T. Roger Smith.—In an obituary notice the "American Architect" speaks of Prof. Roger Smith's "Acoustics of Public Buildings" as being "still, perhaps, the most practically useful work on the subject in print."

"The Trials of a Surveyor."—Referring to the paragraph on p. 83 of our issue for March 25th, the builder who assaulted the Llanfairfechan surveyor by pouring a bucket of water over him when inspecting a building has been fined 10s. and costs.

Flats in S.W. London.—Two blocks of residential flats, known as "Hurlingham Court Mansions," are now nearly completed. A roof garden will give the tenants an uninterrupted view over the Hurlingham Polo Club and surrounding scenery. The contractor for the new buildings is Mr. William Watson, of Ascot. Messrs. Fry & Son, Messrs. Gosslet & Co., and the Falkirk Iron Company have supplied the ironwork, and the Lift and Hoist Company the lifts. Messrs. Palgrave & Co., of Westminster, are the architects.

Architecture on the Stage.—Sir Henry Irving's "Dante," to be produced at Drury Lane Theatre on April 30th, will comprise the following eight scenes:—A street in Pisa, overlooking the Arno; Exterior of the Church of San Miniato, overlooking Florence; Interior of the Castle of the Malatestas in Rimini; A castle on Marshes at Maremma; The chapel of the Convent of Santa Clara; The graveyard of San Miniato; The Inferno; The Palace of the Popes at Avignon. This scenery has been painted in Paris by MM. Ronsin, Amable and Carpezat under the personal supervision of M. Sardou.

A large bronze has just been erected upon the north side of the parish church of St. Mary at Upottery. It has been made and erected by Messrs. Harry Hems & Sons, of Exeter.

A Memorial at Weston-super Mare has been erected in the parish church to the local soldiers who fell in the South African War. It is in alabaster, and has been carried out by Messrs. Harry Hems & Sons, of Exeter.

New Baptist Schools at Lowestoft have been erected in Grove Road. The building is faced externally with red bricks. The dressings are of white Costessey work. The contract amounted to £1,338, and has been carried out by Mr. C. E. Earl, of Lowestoft. The architects are Messrs. George Baines, F.R.I.B.A., and R. Palmer Baines, 5, Clement's Inn, Strand, London, W.C.

A Reredos has just been erected in the Church of St. Michael and All Angels, Howe Bridge, from designs of Messrs. Austin & Paley, the architects of the church. The reredos is of Italian marble, the upper part of the panels being filled with mosaics executed in Venice from designs of Messrs. Shrigley & Hunt. On each side of the reredos arcading in red Devonshire marble extends to the north and south walls of the chancel.

New Bank Premises at Plymouth have been erected for the National Provincial Bank of England, from plans by Mr. Paul Waterhouse, M.A., F.R.I.B.A. Messrs. Lethbridge & Son, of Plymouth, were the contractors. The fibrous plaster ceilings are by Messrs. Jackson, of London; the fittings by Messrs. Worsley, of London; the desk grill and electric standards by Messrs. Hart, Son & Peard, of London; the ornamental tiling by Messrs. Whiting, of Leeds; the stained-glass windows by Messrs. Fouracre & Son, of Stonehouse; and the hydraulic lift by Messrs. Waygood & Otis.

Bricks and Mortar.

Aphorism for the Week.

A work of art will bear all kinds of interpretations; each in turn finds a basis in it, while the work itself, because it represents an idea, and therefore partakes of the richness and complexity which belong to ideas, suffices for all and survives all.—AMIEL.

Our Plates. THE design for a Gothic staircase by Mr. J. Craster Blechynder was submitted in competition to the Edinburgh Architectural Association, and received a prize. The staircase is of Early English style, to be built in stone with lead roof and bronze vane. The vaulting is designed to be constructed of concrete, with stone ribs and bosses.—The church at Clumber, near Worksop, was built in 1886 for the Duke of Newcastle. It is small, of simple traditional plan and very solidly constructed. It has a central tower with spire. The church rises from the even lawn, which slopes southward to a beautiful little lake, against a charming woodland background. It is faced externally with the white stone of a former and demolished building, while the upper portion of the tower, the spire, the buttress faces, copings, tracery and dressed work of doors and windows are of a warm red stone. Internally, its high nave and chancel are roofed with groined stone vaulting, and the red stone is carried through the masonry.

The L.C.C. and Architects. MR. H. H. COLLINS, of 61, Old Broad Street, the district surveyor for the Eastern division of the City, says, after something like forty years' experience of the Metropolitan Board of Works and the London County Council, that, while the officials are very courteous, they are not always amenable to reason. The expense and trouble which are caused by the County Council are well known to the architect, though surveyors may not be so well acquainted with this. An architect submits a set of drawings, and if he makes a difference of one-eighth of an inch in them he is asked to submit another and another set, the resulting expense, trouble and irritation being very great. There is no finality, and one never knows when one has finished with the Council. Architects would be content if the Council would say what they wanted and then rest content with a full compliance with the requirements.

The Decoration of Westminster Cathedral. THE interior decoration of the new Westminster Cathedral has been begun in earnest. The decorations of the side chapels are at present receiving attention, and it is computed that in about three months' time the mosaic work of the chapel of the Holy Souls will be finished, whilst similar work in the chapel of SS. Gregory and Augustine (the funds for which have been given by Lord Brampton) is proceeding apace. Mr. George Bridge, the well-known mosaic artist, has been entrusted with the work, and he is employing a staff of English lady-artists specially trained in this class of work. About twenty-five are at present busy all day in the cathedral, where, perched on scaffolding erected round the chapel roofs, they do their work by the aid of candle-light. The mosaic pictures in the Holy Souls' Chapel will depict saints in Purgatory, whilst the cartoons in the chapel of SS. Gregory and Augustine will represent events in the lives of those two saints. The next chapel on which operations are to be commenced is the chapel of the Blessed Sacrament, the marble work in which is now being finished. The new pulpit, by Medici, of Rome, has just been placed on the nave floor; it is of white statuary marble, beautifully inlaid with mosaic work.

Ideals. THE Glasgow Architectural Association held a meeting recently —Mr. W. J. Blain, vice-president, in the chair —when Mr. Fra. H. Newbery, headmaster of the School of Art, lectured on "Ideals." At the outset Mr. Newbery declared himself an idealist, arguing that what to-day might be ideal and unpractical became possible to-morrow. He deprecated the too close following of tradition, particularly book-work, believing that, just as the Greek, the Roman and the Mediæval architects worked unconsciously of "style," giving but material form to the manifold influences around them, so our own times, through our great business houses, the general wealth and the high excellence of modern technique, offered the rarest opportunities to the artist, not perhaps for the immediate evolution of a new style but for a more complete and positive expression of present-day life and ambitions.

The Work of the Royal Engineers. "IT would be interesting to know," says Mr. Labouchere in "Truth," "how far the 'big building department' described by Lord Stanley on the vote for the staff and services for Royal Engineer works, &c., is in accordance with the recommendations of Lord Esher's Committee. This big department, according to Lord Stanley, is to be 'nominally under' but 'a separate department from that of the Inspector-General of Fortifications'; and all the Engineer officers employed in it are to be employed there for prolonged periods—I presume more or less permanently. Lord Esher's Committee, unless I am mistaken, strongly recommended the transference of building works to civilians, and that seems to me the only sound principle. All the scandals of the Army Works Department, from the days of the Dublin Barracks business downwards, have pointed to the inability of the Royal Engineers to properly supervise big building jobs; and there is no reason to suppose that the mere prolongation of their term of employment upon such work will make things any better."

Victoria and Albert Museum. PART of the quadrangle bordering the south court is approaching completion; but it has not yet been decided whether this will be utilized for exhibition purposes. Some additions have been made to the display of carved woodwork in the entrance from the Exhibition Road. The principal is an ecclesiastical screen of carved oak, with brass fittings (bookstand, candlesticks and ornaments), originally in a Dutch church, and dating from the beginning of the eighteenth century. The front is panelled in three compartments, of which two, for the elders, bear the inscription on scrolls, "Ouderlingh," and the other, for the preacher, the word "Predikant"; in each panel is also a shield of arms. A mantelpiece of carved stone is worth notice; it was taken from an old house at Norwich, and is early seventeenth-century English work. The treatment of the winged monsters in the decoration is bold and effective. On the opposite side is a cast of a Sussex fire-back, bearing the arms of Queen Elizabeth. In the north court there has recently been erected a fine screen of seventeenth-century date from a monastery in one of the Greek Islands. The central doors are panelled, and ornamented with figures of saints painted in the Byzantine style. The panelling on each side is separated by pillars. The order above is also panelled, and on the top are carved representations of the sacred dove.

ROADS AND STREETS.

AT a meeting of the Society of Engineers held at the Royal United Service Institution, Whitehall, on April 6th, a paper was read on "Road Maintenance and Administration" by Mr. Robert J. Thomas, M.I.C.E. He said there were now 26,978 miles of main roads in England and Wales, as compared with 18,070 in 1889, and that sixty county councils were responsible for them; forty of whom had adopted direct management, the advantages of which he enumerated. Discussing materials and pointing out the enormous growth in the sale of granite during recent years to the exclusion of other softer stones, Mr. Thomas expressed the opinion that for country main roads a size not exceeding 1¾in. or 2in. gauge was the most desirable, and that too much reliance should not be placed upon tests made under artificial conditions not met with in the daily wear-and-tear of roads. Giving the results of tests made in actual wear, he stated that on a country main road, granite surface, steam-rolled, with an ascertained traffic of 100,000 collars per annum, the actual wear averaged 1in. in five years, that 1·5in. wear took place along the 7ft. in centre, and rather more than ½in. along each of the 6ft. 6in. sides.

Referring to Metropolitan and town streets, and to the exaggerated statements made relative to the streets of foreign towns being so much better than those in London, the author instanced towns in Russia which had been held up as patterns, although they were anything but satisfactory. He laid stress on the unique size of the Metropolis, its variations of climate and temperature, the phenomenal traffic, and particularly the power which companies had been given by Parliament to cut open and block streets, and which was exercised to such an extent that the rights and access of the public to their own thoroughfares were already small and fleeting and the costs of restoration of surfaces enormous; all which might be obviated if subways were constructed and the companies compelled to move their pipes and cables into them. He expressed the opinion that slow traffic should be better regulated, that vehicles should be kept close to the near side of the street, that omnibuses should stop at fixed points, and that the loading or unloading of railway and other goods vans should be prohibited in busy thoroughfares.

Admitting the necessity for tramways in large towns and their help in solving the housing question, the author strongly advocated that country roads should be widened to 40ft. where a double line of tramways was laid, in order to provide at least 12ft. of metalled roadway at each side.

New road construction for motor and other fast traffic he did not consider feasible, but suggested that the cost of widening existing roads in rural districts sufficiently to provide a dry hard track might be borne by the State, a tax at per h.p. per car being levied sufficient for its up-keep, which tax would necessarily diminish as the number of motors increased.

FIRE-STATION DESIGNS.

ARCHITECTS who have designed fire stations are requested to communicate with Mr. Frederick R. Farrow, F.R.I.B.A., of 29, New Bridge Street, E.C., not later than Saturday, April 25th, with the view of the possible exhibition of perspectives, elevations, photographs or plans of modern stations in the architectural group of the forthcoming International Fire Exhibition at Earl's Court.

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Supplement to
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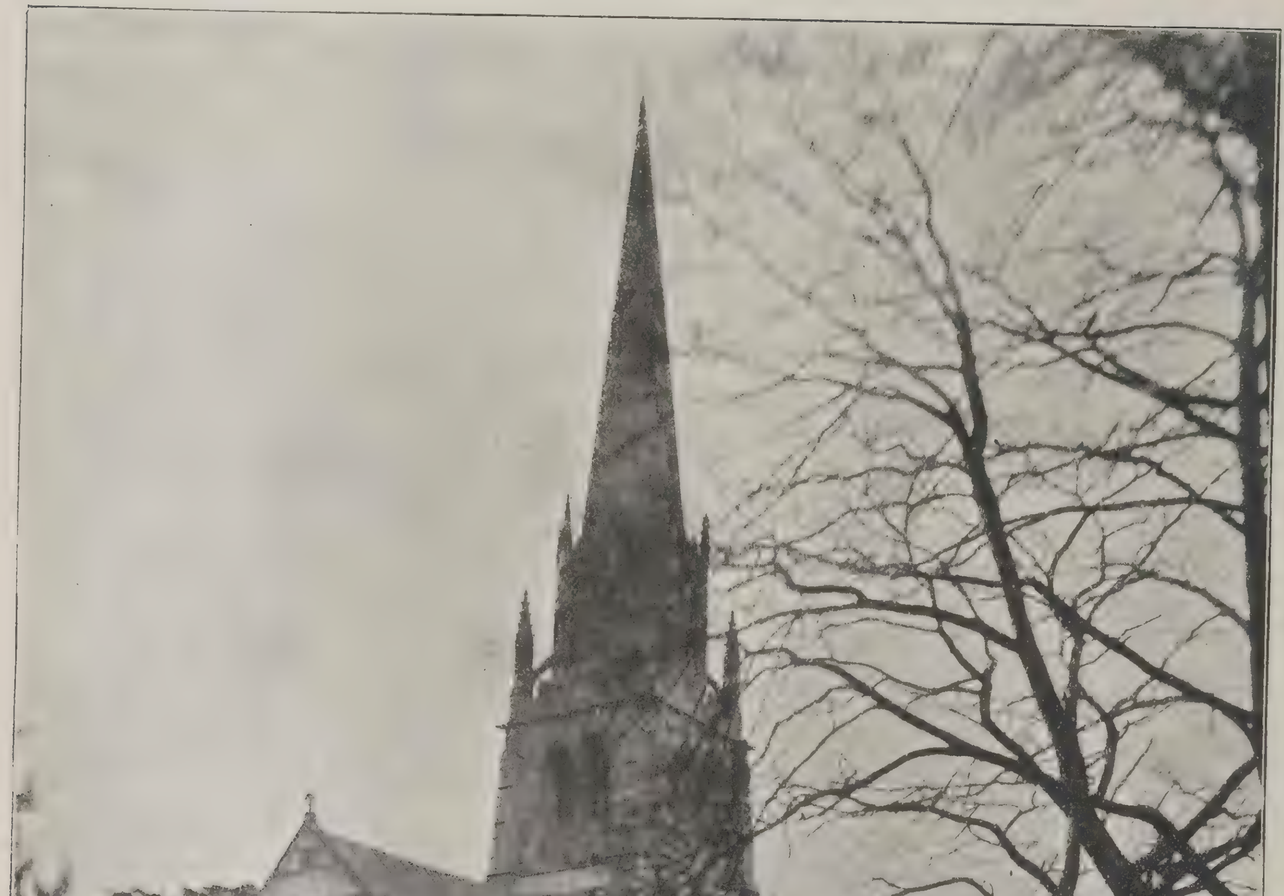
Wednesday, April 22nd, 1903.



FROM THE SOUTH-WEST.

THE CHURCH OF ST. MARY THE VIRGIN, CLUM

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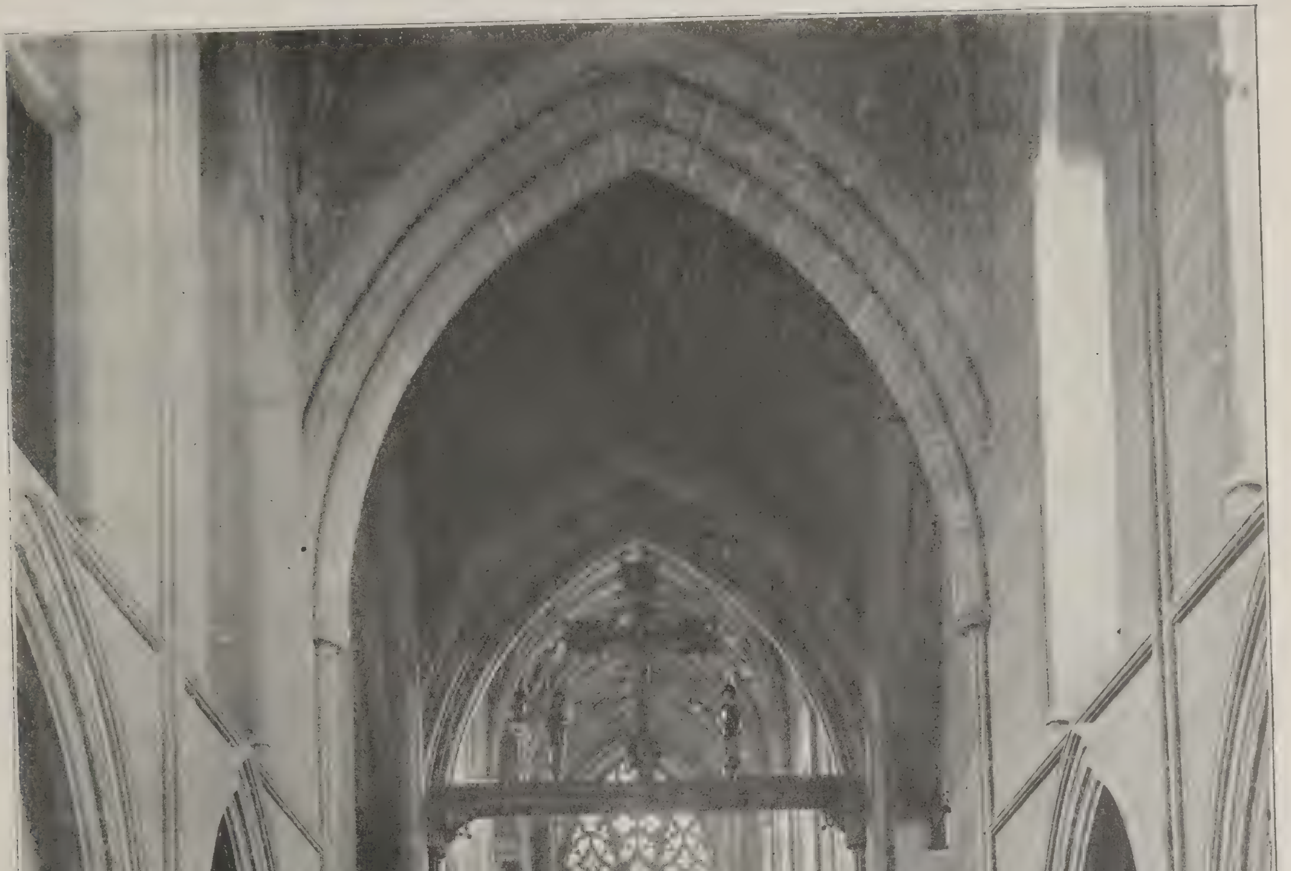

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NOTTS. G. F. BODLEY R.A., ARCHITECT.

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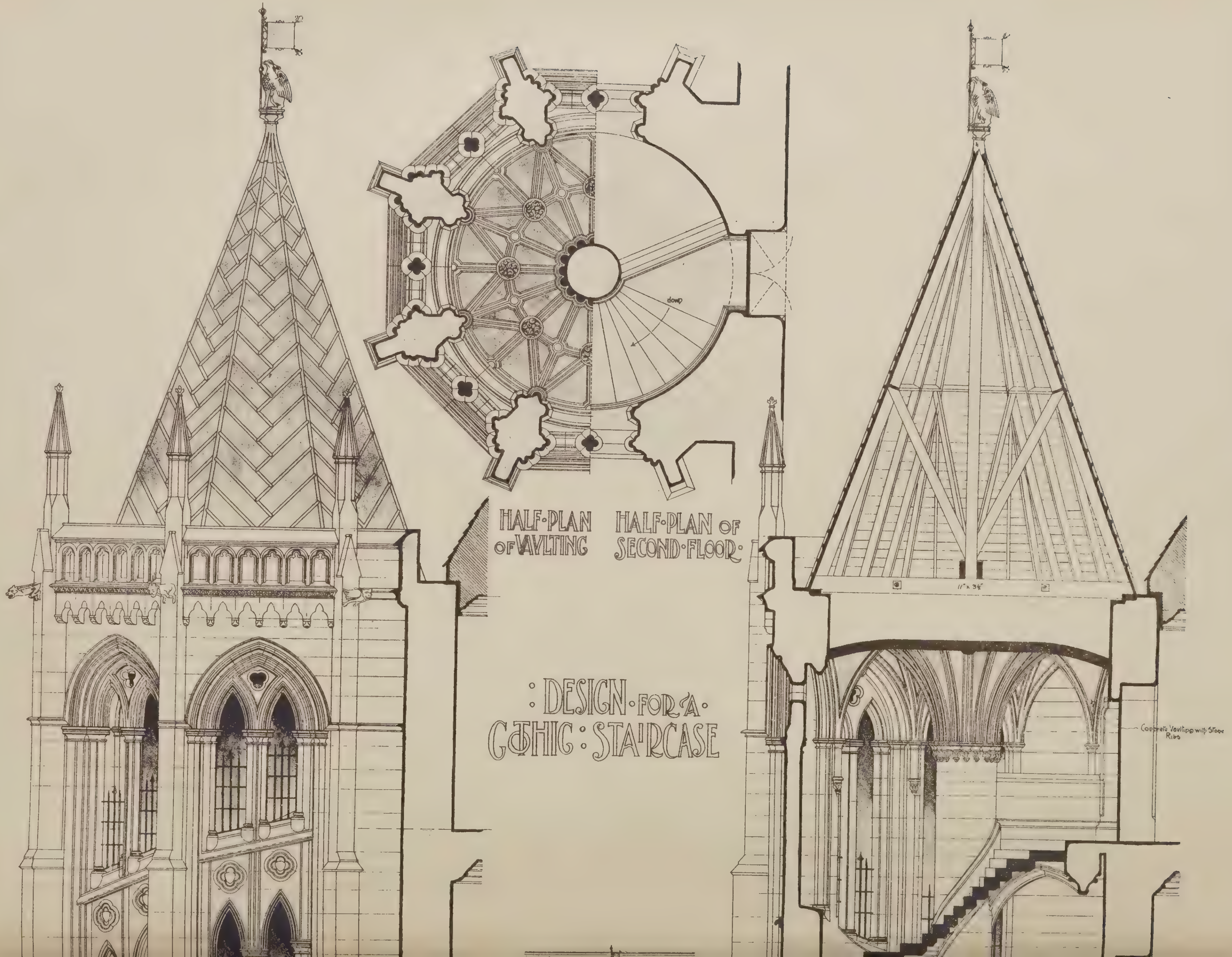

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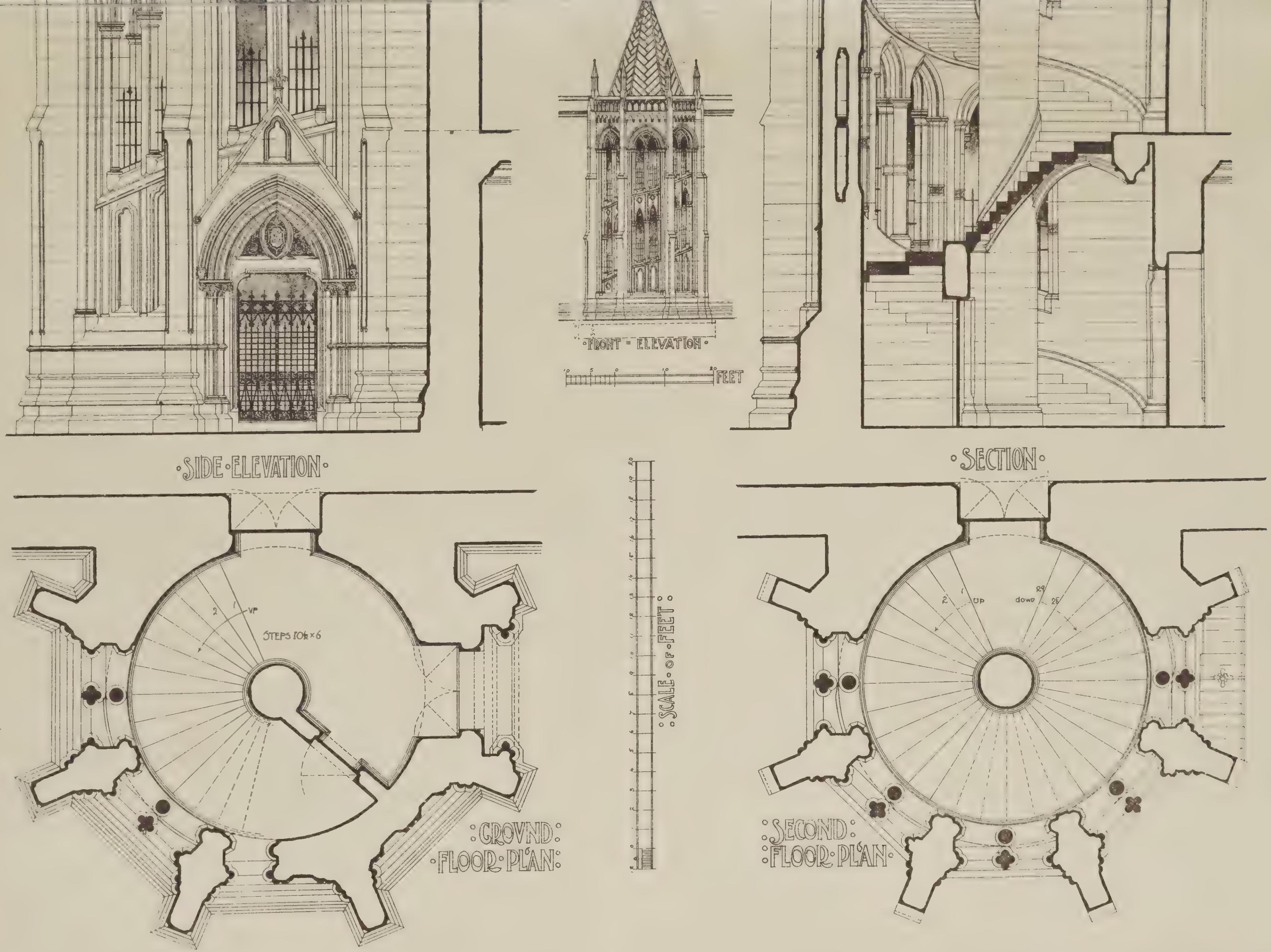

BY J. C. BLECHYNDEN.

"INK-PHOTO." R. J. EVERETT & SONS, 56 LUDGATE HILL, E.C.

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Vacant Appointments.

[The dates given are those on which the application is to be sent in, and the name given is that of the person to apply to. In nearly every case the application has to be made on a special form, which can be obtained from the officials mentioned.]

April 22.
DEVON COUNTY COUNCIL.—Architect and surveyor of school buildings, £400. H. Michelmore, clerk.

April 24.
SETTLE R.D.C.—Two highway surveyors, £100 each. T. E. Pearson, clerk.

April 25.
ROYAL DEVON AND EXETER HOSPITAL.—Working engineers, 50s. per week. Secretary.

April 28.
EATON R.D.C.—Inspector of nuisances, £112. R. H. Barrett, clerk.

April 30.
BURTON-ON-TRENT.—Borough engineer, £300. T. N. Whitehead, town clerk.

May 2.
BIRMINGHAM (Municipal Technical School).—Lecturer in Electrical Technology, £170. Lecturer in Mechanical Engineering subjects. Geo. Mellor, secretary.

LONDON COUNTY COUNCIL.—Principal of Technical Institute, £500. G. L. Gomme, clerk.

May 9.
BARROW-IN-FURNESS.—Teacher of manual instruction in woodwork, £80. W. Hutchinson, clerk to the School Board.

New Companies.

PROCTOR & COTTRILL, LTD., electric light contractors, &c. Capital: £1,000 in £1 shares.

ABARETA WOODS, LTD., wood colourers. Capital: £5,000 in £1 shares.

JOSEPH T. FIRBANK, LTD., railway contractors, builders, &c., 15 and 16, Railway Approach, London Bridge, S.E. Capital: £150,000 in £10 shares.

J. SHERVELL, LTD., engineers, smiths, Government contractors, builders, &c., 3, Unicorn Road, Landport, Portsmouth. Capital: £7,000 in £1 shares.

PHYTHIAN ENGINEERING CO., LTD., engineers, contractors, ironfounders, &c., Brook Ironworks, Buglawton, near Congleton, Cheshire. Capital: £10,000 in £1 shares

GEORGE M. CALLENDERS CO., LTD., manufacturers of bitumen dampcourse, asphalt, builders, contractors, &c., 25, Victoria Street, S.W. Capital: £75,000 in £1 shares.

HUGHES' BUILDINGS, LTD., land and property owners, builders, contractors, decorators, &c., 8, Sussex Street, Manchester. Capital: £20,000 in £10 shares.

GRAYS STEEL CONSTRUCTION CO., LTD., manufacturers of iron and steel-work. contractors for fireproof work, &c., Finsbury Pavement House, E.C. Capital: £20,000 in £10 shares.

STANLEY PARK BRICK CO., LTD., manufacturers of bricks, tiles, pipes, ceramic ware, paviors, artificial stone-dealers in building requisites, &c., Gloucester Road. Soundwell, Staple Hill, Bristol. Capital: £10,000 in £10 shares.

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver.]

DURING THE WEEK ending April 18th four failures in the building and timber trades in England and Wales were gazetted.

F. MILLS, builder, Bexhill. R.O. April 8th.

A. ROWLANDS, joiner, Aberystwyth. R.O. April 7th.

B. S. BODDY, builder, Willesden Green, London, N.W. R.O. April 6th.

J. W. RADNEDGE, builder. Merthyr. Liabilities £1,507; £1,084 expected to rank for dividend; deficiency £779.

PENNICK & TAYLOR, builders, Clacton-on-Sea. Liabilities £7,672; assets £1,304; deficiency £1,106

J. S. CARLETON, contractor, Aintree, Liverpool. First meeting, O.R's., Liverpool, April 21st, at 2. P.E., Liverpool C.C., April 23rd, at 11.

J. ASHBY, builder, Lowestoft. Gross liabilities £34,833; £7,516 expected to rank for dividend; assets estimated at £6,457; deficiency £1,089.

E. J. LEESE, builder and joiner, Wrockwardine Wood, near Wellington. Liabilities £120; assets £34; deficiency £86.

H. M. CURRINGTON, shop and office fitter, Walsoken and Wisbech. First meeting, King's Lynn C.C., April 23rd, at 10. P.E., King's Lynn C.C., April 23rd, at 11.

C. WINTERBURN, builder, Leeds. R.O. April 7th. First meeting, O.R's., Leeds, April 22nd, at 11. P.E., Leeds C.C., May 9th, at 11.

W. E. TAYLOR, builder, Maidenhead. First meeting, 95, Temple Chambers, Temple Avenue, E.C., April 23rd, at 12. P.E., Windsor Town Hall May 16th, at 11.

J. ROBINSON, brick manufacturer, Billingham. First meeting, O.R's, Middlesbrough, April 22nd, at 3. P.E., Stockton-on-Tees C.C., April 22nd, at 10.30.

E. E. TYRRELL, builder, joiner and contractor, Herne Bay and Sandwich. R.O. April 7th. First meeting, O.R's., Canterbury, May 7th, at 10. P.E., Guildhall Canterbury, May 7th, at 10.

H. F. SIRCOM, timber merchant and builder, Manchester. R.O. April 7th. First meeting, O.R.'s, Manchester, April 22nd, at 2.30. P.E., Salford C.C., May 5th, at 10.30.

Obituary.

Mr. Oswald Dent, builder, of Leyburn, died recently at the age of fifty-two years.

Mr. Thomas May, builder, of Alrewas, died last week at the age of sixty-four years.

Mr. Richard Philip Day, an Associate of the Royal Institution of British Architects, has died at his residence, Bloomsbury Square, W., from cancer. Mr. Day was closely connected with the Church in the Dioceses of Canterbury and London, having been diocesan architect and surveyor for Canterbury and a surveyor of ecclesiastical dilapidations for the Diocese of London.

Coming Events.

Wednesday, April 22.
EDINBURGH ARCHITECTURAL ASSOCIATION.—Annual General Meeting and President's Valedictory Address by Mr. A. Hunter Crawford, F.R.I.B.A.

CHEMICAL SOCIETY.—Meeting at 5 30 p.m.

EASTERN COUNTIES MASTER BUILDERS FEDERATION.—Council Meeting at 3 p.m. Annual General Meeting at 3.30 p m. at Cups Hotel, Colchester.

Thursday, April 23.
SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—Mr. H. Beaumont on "Ruskin's Bible of Amiens."

SOCIETY OF ARCHITECTS.—Mr. J. Miller Carr (of Doulton's, Ltd.) on "Modern Terra-Cotta, Constructional Faïence, and Keramic Mural Decoration," 8 p.m.

SOCIETY OF ANTIQUARIES OF LONDON.—Anniversary meeting at 2 p.m.

INSTITUTION OF ELECTRICAL ENGINEERS.—Messrs. A. D. Constable and E. Fawsett on "Distribution Losses in Electric Supply Systems." Mr. M. B. Field on "A Study of the Phenomenon of Resonance in Electric Circuits by the aid of Oscillograms." Mr. W. Aitken on "Divided Multiple Switchboards. An Efficient Telephone System for the World's Capitals," 8 p.m

INSTITUTION OF MECHANICAL ENGINEERS.—Anniversary Dinner at the Hotel Cecil.

Friday, April 24.
JUNIOR INSTITUTION OF ENGINEERS.—Mr. R. W. Newman, M.I.M.E., on "The Effect of Design on Methods of Construction, from a Contractor's point of view," 8 p.m.

INSTITUTION OF CIVIL ENGINEERS (Students' Meeting).—Mr. H. S. Watson on "Bacterial Sewage-Disposal Works at Ash, Dover," 8 p.m.

INSTITUTION OF MECHANICAL ENGINEERS.—Prof. W. E. Dalby on "The Education of Engineers in America, Germany and Switzerland," 8 p.m.

ROYAL INSTITUTION.—Hon. R. J. Strutt on "Some Recent Investigations in Electrical Conduction," 9 p.m.

Saturday, April 25.
ROYAL INSTITUTION.—Professor Langton Douglas on "The Early Art of Siena"—I., 3 p m.

Tuesday, April 28.
INSTITUTION OF CIVIL ENGINEERS.—Discussion on Mr. James Taylor Milton's paper on "The Decay of Metals," 8 p.m.

SOCIETY OF ARTS. (Applied Art Section).—Visit to the Whitefriars Glassworks. Mr. Harry Powell on "Modern Table Glass," 7.30 p.m.

Wednesday, April 29.
ARCHITECTURAL ASSOCIATION (Discussion Section).—Mr. Henry Cotman on "A Tour in Gloucestershire," 7.30 p.m.

RUSKIN SOCIETY OF BIRMINGHAM.—Annual Meeting, 7.45 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. A. Hunter Crawford on "The Building of a House."—V., 8 p.m.

Thursday, April 30.
SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

The Wesleyan Chapel, Port Dinorwic, is being fitted with the latest improved hot-water heating apparatus by Messrs. John King, Ltd., engineers, of Liverpool.

The General Hospital, Pontypool, has been supplied by Messrs. E. H. Shorland & Brother, of Manchester, with their patent Manchester stoves with ornamental tiled sides and descending smoke-flues and Manchester grates.

Current Market Prices

FORAGE.

		£	s.	d	£	s.	d
Beans	per qr.	1	9	9	1	12	3
Clover, best	per load	4	7	6	4	15	0
Hay, best	do.	3	15	0	[illegible]	10	0
Sainfoin mixture	do.	3	15	0	4	5	0
Straw	do.	1	8	0	1	18	0

OILS AND PAINTS.

		£	s.	d	£	s.	d
Castor Oil, French	per cwt.	1	1	0	1	2	2
Colza Oil, English	do.	1	3	0		—	
Copperas	per ton	2	2	6		—	
Lard Oil	per cwt.	2	15	0	2	17	0
Lead white, ground, carbonate	do.	1	4	10	—		
Do. red	do.	1	0	4½			
Linseed Oil, barrels	do.	1	4	0		—	
Petroleum, American	per gal.	0	0	5¼	0	0	5¾
Do. Russian	do.	0	0	4	0	0	4⅛
Pitch	per barrel	0	8	0		—	
Shellac, orange	per cwt.	5	17	0		—	
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Home Melt	per cwt.	1	10	3	1	11	0
Tar, Stockholm	per barrel	1	1	6		—	
Turpentine	per cwt.	2	3	9		—	

METALS.

		£	s.	d	£	s.	d
Copper, sheet, strong	per ton	78	0	0		—	
Iron, Staffs., bar	do.	6	5	0	8	10	0
Do. Galvanised Corrugated sheet	do.	11	10	0	11	15	0
Lead, pig, Soft Foreign	do.	12	0	0	13	9	0
Do. do. English common brands	do.	13	0	0		—	
Do. sheet, English 3lb. per sq. ft and upwards	per ton	14	10	0		—	
Do. pipe	do.	15	0	0		—	
Nails, cut clasp, 3in to 6in.	do.	9	5	0		—	
Do. floor brads	do.	9	0	0		—	
Steel, Staffs., Girders and Angles	do.	5	15	0	6	10	0
Do. do. Mild bars	do.	6	12	6	7	2	6
Tin, Foreign	do.	138	2	6	138	12	6
Do. English ingots	do.	139	0	0	140	0	0
Zinc, sheets, Silesian	do	24	0	0		—	
Do. do. Vieille Montaigne	do.	24	10	0		—	
Do. Spelter	do.	22	15	0	22	17	6

TIMBER.

SOFT WOODS.

		£	s.	d	£	s.	d
Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow	do.	5	5	0	6	5	0
Do. Pitch	do.	3	0	0	3	4	0
Laths, log, Dantzic	per fath.	4	10	0	5	10	0
Do. Petersburg	do.	7	5	0		—	
Deals, Archangel, Yellow—4th, 3×9	per P.Std.	10	15	0		—	
Do. Riga	do.	6	15	0	12	10	0
Do. Sandvik, 3rd Yellow 2×5	do.	6	15	0		—	
Do. do 1st and 2nd White, 2×4	do.	8	0	0		—	
Do. Kovda, Yellow—3rd 3×9	do.	13	5	0		—	
4th 3×11	do.	9	10	0		—	
Do Skellefteå, Yellow, mixed, 2½×8	do.	9	15	0		—	
Do. Luleå, 1st Yellow 4×11	do.	12	0	0		—	
Do. Quebec Red Pine, 2nd 3×9	do.	9	10	0		—	
Do. do. do. 3×7	do.	7	15	0		—	
Do. do. 3rd White Spruce, 3×11	do.	9	10	0		—	
Do. Galatz, 3rd White 3×11	do.	8	17	6		—	
Do. do. 4th do. 2½×11	do.	7	0	0		—	
Do. Trangsund, 1st & 2nd Yellow, 4×9	do.	9	15	0		—	
Do. Mesane, 2nd White, 3×9	do.	10	5	0		—	
Do. Petersburg, 1st Dry Yell. (Wolchoff)	do.	13	15	0		—	
Do. Sandarne, 5th Yell., 4×11	do.	10	10	0		—	
Do. do. do. 3×9	do.	8	5	0		—	
Do. Sanguenay, unsorted Crown Spruce—3×8×10ft.	do.	8	15	0		—	
Do. do. 3×7×9 to 11ft.	do.	7	15	0		—	
Do. Hernösand Inferior, 5th Yellow. 3×7	do.	5	15	0		—	
Do. Pitea, Unsorted Yellow 3×9	do.	10	5	0		—	
Battens, all kinds	do.	6	10	0	12	0	0
Flooring Boards 1in. prepared, 1st	per square	0	11	3	0	12	0
Do. 2nd	do.	0	8	3	0	11	0
Do. 3rd &c.	do.	0	8	3	0	10	0

HARD WOODS.

		£	s.	d	£	s.	d
Ash, Quebec	per load	3	12	6		—	
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	15	0	0	20	0	0
Cedar, Cuba	per ft. sup.	0	0	5¼		—	
Do. Honduras	do.	0	0	$4\frac{15}{16}$		—	
Do. Tobasco	do.	0	0	$4\frac{13}{32}$		-	
Elm, Quebec	per load	4	0				
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0	0	$6\frac{11}{32}$		—	
Do. Benin	do.	0	0	$5\frac{23}{32}$	0	0	$6\frac{1}{32}$
Do. St. Domingo	do.	0	0	$3\frac{29}{32}$		—	
Do. Tobasco	do.	0	0	$6\frac{1}{32}$	0	0	$8\frac{11}{16}$
Do. Cuba	do.	0	0	$8\frac{19}{32}$	0	4	$4\frac{1}{16}$
Do. Lagos	do.	0	0	4⅜		—	
Oak, Dantzic and Memel	per load	3	5	0	3	15	0
Do. Quebec	do.	6	5	0		10	0
Teak Rangoon, planks	do.	16	0	0	17	10	0

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MANCHESTER, BIRMINGHAM, LEEDS, &c.

Complete List of Contracts Open.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	BUILDING:		
April 23	Baildon, Yorks—House	——	Walker & Collinson, Architects, Swan Arcade, Bradford.
„ 23	Evenwood—Four Houses	——	J. Keenan, 14 North Bondgate, Bishop Auckland.
„ 23	Aberystwyth—Schoolroom	Trustees St. Paul s Chapel	J. L. Evans, 21 Great Darkgate Street, Aberystwyth.
„ 23	Cookstown—Residence	——	E. & J. Byrne, 4 Waring Place, Belfast.
„ 23	Durham—Eleven Houses	Co-operative Society, Ltd.	G. Ord, 16 The Avenue, Durham.
„ 23	Huddersfield—Bungalow, Outbuildings, Boundary Walls, &c.	——	J. Kirk & Sons, Architects, Huddersfield.
„ 23	Ipswich—House	Guardians	H. J. Wright, 4 Museum Street, Ipswich.
„ 23	Northowram—Farmhouse	——	J. F. Walsh & G. Nicholas, Architects, Museum Chbrs., Halifax.
„ 23	Longford—Retorts, Bricks, Fireclay	Gas Co., Ltd.	W. E. Young, Gas Offices, Longford.
„ 24	Bristol—Four Underground Concrete Sub-Stations	Electrical Committee	H. F. Proctor, City Electrical Engineer, Templeback, Bristol.
„ 24	Halifax—Four Shops, Warehouse, Stable, &c.	——	J. F. Walsh & G. Nicholas, Architects, Museum Chambers Harrison Road, Halifax.
„ 24	Sedbergh, near Kendal—Alterations and Additions	J. Dover & Sons	S. Shaw, 48 Highgate, Kendal.
„ 24	Shildon—Alterations and Reseating of Chapel	——	Rev. W. Gelley, 21 Wesley Crescent, Shildon.
„ 24	Shoeburyness—School, &c.	S. Shoebury School Board	Burles & Harris, Architects, Clarence Chambers, Southend-on-Sea.
„ 24	Southampton—Corn Market	Corporation	J. A. Crowther, Borough Engineer, Municipal Offices, Southampton.
„ 24	Windermere—Addition to Hospital Buildings	Urban District Council	R. Walker, Architect, Windermere.
„ 24	Walsall—Bricks, Cement, &c.	Rural District Council	F. W. Mager, District Surveyor, Council Offices, Aldridge, Walsall.
„ 25	Eastbourne—Fire Station	Corporation	P. A. Robson, 9 Bridge Street, Westminster, S.W.
„ 25	Pontrhydyfen, Wales—Chapel	——	G. P. Davies, Architect, Port Talbot.
„ 25	Cardiff—Alteration of Buildings	Guardians	E. Seward, Architect, Queen's Chambers, Cardiff.
„ 25	Ambergate—Two Houses	——	J. Thorpe, Ridgeway.
„ 25	Southampton—Alterations, &c., at Police Station	——	W. J. Taylor, County Surveyor, The Castle, Winchester.
„ 25	Walesby—Chapel and School	——	J. Redhead, 11 Church Street, Market Rasen.
„ 25	Redhill—Market Hall	——	A. Smith, Market Hall, Redhill.
„ 27	Aberaman—Thirty-seven Houses	——	T. Roderick, Architect, Clifton Street, Aberdare.
„ 27	Consett—Outoffices, &c.	Iron Co., Ltd.	C. E. Oliver, Company's General Offices, Consett.
„ 27	Abertillery—School Out-Offices, &c.	Aberystruth School Board	R. L. Roberts, Architects, Abercarn, Mon.
„ 27	Aberdeen—Offices and Dwelling House	Harbour Commissioners	R. G. Nicol, Harbour Engineer Aberdeen.
„ 27	Leith—Houses, &c.	Gas Commissioners	W. R. Herring, Engineer, New Street Works, Edinburgh.
„ 27	Manchester—Bricks, Cement, &c.	Corporation	Secretary, Rivers Department, Town Hall, Manchester.
„ 27	Aberdeen—Conveniences	Harbour Commissioners	R. G. Nicol, Harbour Engineer, Aberdeen.
„ 27	Thistle Hill, near Knaresboro'—Isolation Hospital	——	G. H. Stanger, Architect, Queen's Chambers, North Street, Wolverhampton.
28	Torksey—Chimney Shaft, &c.	——	H. Walker & Son, Engineers, King Street, Nottingham.
„ 28	Oldham—Public Baths	Corporation	A. R. Groome & J. L. Grant 2 St. Peter's Square, Manchester.
„ 28	Bristol—Alterations, &c., to Shed	Great Western Railway Co.	Engineer, Bristol Station.
„ 28	Ilford—Boiler-House, Chimney, &c.	Gas Company	Engineer, Gasworks, High Road, Ilford.
„ 28	Gateshead—Ten Houses	North-Eastern R'y. Co.	W. Bell, Company's Architect Central Station, Newcastle-on-Tyne.
„ 28	Pontypool—House	Great Western Rly. Co.	Engineer, Newport Station.
„ 28	Bessbrook, co. Armagh—Schools, &c.	——	J. J. M'Donnell, 27 Chichester Street, Belfast.
„ 29	Bridport—Iron Hospital, Baths, Earth-Closets, &c.	Rural District Council	J. J. Roper, 74 East Street, Bridport.
„ 29	Claremorris, Ireland—Hospital	Guardians	J. Ritchie, C.E., Ballinrobe.
„ 29	Holbeach—Infirmary Buildings	Workhouse Guardians	R. P. Mossop, Clerk, Holbeach.
„ 29	Pontypool—Mortuary	Guardians	T. Watkins, Clerk, Club Chambers, Pontypool.
„ 29	Manchester—Foundations of Fire and Police Stations	Watch Committee	W. Windsor, 37 Brown Street, Manchester.
„ 29	Fowey, Cornwall—Masonry Lighthouse Tower	Harbour Commissioners	W. T. Douglass, 15 Victoria Street, Westminster, S.W.
„ 30	Kirkby-in-Furness—Church Restoration	Executive Committee	J. Standen-Adkins, 3 Maze Road, Kew.
„ 30	Carno—Chapel	——	R. Swancott, Cae-du-Cottage, Carno.
„ 30	Cleator Moor—Alteration, &c., of Classroom	St. Patrick's School	R. Robinson, Public Offices, Cleator Moor.
„ 30	Aberdeen—Alterations, &c., to Steadings	——	W. Stewart, Builder, Inverarie.
„ 30	North Berwick—Gasworks	Town Council	A. D. Wallace, Town Clerk, North Berwick.
„ 30	Leicester—Church Restoration	——	G. R. Boreham, 24 John Street, Sunderland.
May 1	Hull—Foundations for Baths	Corporation	A. E. White, City Engineer, Town Hall, Hull.
„ 1	Exminster, Devon—Asylum Buildings	——	E. H. Harbottle, County Chambers, Exeter.
„ 1	Sunderland—Electrical Sub-station, &c.	Corporation	J. F. C. Snell, Borough Electrical Engineer, Town Hall, Sunderland.
„ 1	St. Mary Bourne, Hants—Extension of Cloakrooms	School Board	S. Clarke, Clerk, Whitchurch, Hants.
„ 2	Leek—Electric Lighting Station	Urban District Council	J. Taylor, Architect, Leek.
„ 4	Preston—Skew Masonry and Brick Bridge	Lancashire County Council	W. C. Hall, County Bridgemaster, Preston.
„ 4	Southampton Superstructure of Electric Light Station	Corporation	J. A. Crowther, Borough Engineer, Municipal Offices, Southampton.
„ 9	York—Engine and Boiler Houses, &c.	Corporation	A. Creer, City Engineer, Guildhall, York.
„ 9	Bridlington — Engine-Rooms, Boiler-House, Chimney, Offices, &c.	Corporation	E. R. Matthews, Borough Surveyor, Town Hall, Bridlington.
„ 9	Egremont—Fire Bricks, Retorts, &c.	Wallasey U.D.C.	Manager, Gas and Waterworks, Great Float, Birkenhead.
„ 9	Bury, Lancs—Bridge Improvement Works	Corporation and County Council	County Bridgemaster, Preston.
„ 11	Deptford—Municipal Buildings	Borough Council	W. T. Farthing & Son, 46 Strand, W.C.
„ 12	Camberwell, S.E.—Public Baths and Washhouses, Underground Convenience.	Borough Council	C. W. Tagg, Clerk, Town Hall, Camberwell, S.E.
„ 12	London, S.E.—Public Baths and Washhouses, &c.	Camberwell Borough Council	W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E.
19	Portsmouth—Technical Institute and Free Library	Corporation	G. E. Smith, 145 Victoria Road North, Southsea.
	ENGINEERING·		
April 23	Southampton—Boiler	Guardians	D. P. Gwillim, Clerk, St. Mary Street, Southampton.
„ 23	London, S.W.—Steamboat	Lords Commissioners of the Admiralty.	Secretary to the Admiralty, Ship Branch, Whitehall, S.W.
„ 24	Londonderry—Electrical Plant	Corporation	Preece & Carden, 8 Queen Anne's Gate, Westminster, S.W.
„ 24	Newcastle-on-Tyne—Rebuilding, &c. Bridges	Northumberland County Council	J. A. Bean, County Surveyor, The Moot Hall, Newcastle-on-Tyne.
„ 25	Aspatria, Cumberland—Waterworks	Joint Water Board	F. Richardson, Clerk to the Board, Aspatria.
„ 25	Gerkar Moor, near St. Austell, Cornwall—Steel Aqueduct, Masonry Piers, &c.	Charlestown Proprietors	T. H. Andrew, 1 Trevarrick Villas, St. Austell.
„ 25	Kintallin, Loch Linnhe, Scotland—Pier, &c.	Quarrier Co., Ltd.	Formans & M'Call, 160 Hope Street, Glasgow.
„ 27	Bath—Cables	Corporation	Kincaid, Waller, Manville & Dawson, 29 Great George Street Westminster.
„ 27	Newport, Mon—Two Motors	Electric Light and Tramways Committee.	H. C. Bishop, Borough Electrical Engineer, Newport.
„ 27	Sowerby Bridge, Yorks—Gasholder, Purifier, &c.	Urban District Council	A. W. Bissell, Engineer, Gasworks, Sowerby Bridge.
„ 27	Faversham—Electric Lighting Plant	Corporation	Hopkinson & Talbot, 26 Victoria Street, London, S.W.
„ 27	Culross, Scotland—Drainage System	Town Council	Kyle, Dennison, & Laing, 175 Hope Street, Glasgow.
„ 27	Sowerby Bridge, Yorks—Gasholder, &c.	Urban District Council	A. W. Bissell, Engineer, Gasworks, Sowerby Bridge.
„ 27	Ipswich—Electrical Plant	Corporation	W. Bantoft, Town Clerk, Town Hall, Ipswich.
„ 27	Castlewellan, co. Down—Railway Extension	Gt. Northern Rlwy. Co. (Ireland)	W. H. Mills, Engineer in-Chief, Amiens Street Terminus, Dublin
„ 28	West Ham—Iron Tank	Town Council	Borough Engineer, Town Hall, Stratford, E.
„ 29	Motherwell, Scotland—Reservoir, Well-house, Two Houses, &c.	Town Council	J. M'Callum, Borough Engineer, Motherwell.
„ 29	Fowey, Cornwall—Masonry Lighthouse Tower	Harbour Commissioners	W. T. Douglass, 15 Victoria Street Westminster, S.W.
„ 29	Dinant to Florenres—Railway	——	M. d'Artevelle, Rue de Turquie, No. 18 Saint Gilles Bellefroid.
„ 30	Christiania—Cranes	——	Head Engineer, Tangerand and Aal Railway, Vossevangen.
„ 30	London—Electrical Plant	Hackney Borough Council	R. Hammond, 64 Victoria Street, Westminster, S.W.
„ 30	Wimbledon—Sludge Presses, &c.	Urban District Council	C. H. Cooper, Engineer, Council Offices, The Broadway, Wimbledon
May 1	Kettering—Electrical Plant	Urban District Council	J. Bond, Clerk, Council Offices, Kettering.
„ 2	Central Australia—Railway	South Australian Government	Agent-General for South Australia, London.
„ 4	Glasgow—Cables, &c.	Corporation	W. A. Chamen, 75 Waterloo Street, Glasgow.
„ 4	Macclesfield—Laying Water Mains	Rural District Council	J. Thorpe, King Edward Street, Macclesfield.
„ 4	Settle—Waterworks	Rural District Council	T. A. Foxcroft, Surveyor, Town Hall, Settle.
„ 4	Bury—Blackford Bridge Improvement Works	Corporation	W. C. Hall, County Bridgemaster, Preston.
„ 5	London, S.W.—Fire Float	London County Council	Clerk, County Hall, Spring Gardens, S.W.
„ 7	Uppingham—Waterworks	Trustees of Uppingham School	G. & F. W. Hodson, Engineers, Bank Chambers, Loughborough.
„ 9	Lisbon—Metal and Stone Bridge	Ministry of Public Works	Commercial Intelligence Branch of Board of Trade, 50 Parliamen Street, S.W.
„ 12	Cairo, Egypt—Electrical Power Transmission	Egyptian Government	Public Works Department, Cairo.
July 1	Rangoon—Electric Supply Undertaking	Municipal Committee	Ogilvy, Gillanders & Co., 67 Cornhill, E.C.
„ 1	Penybont, Wales—Sewerage Works	Rural District Council	Burnett & Hurley, 10 Bridgend Rd., Tondu, Aberkenfig, Glamorgan
	FURNITURE:		
April 25	Styal, Cheshire—Furniture, &c.	Chorlton Union Guardians	D. S. Bloomfield, Clerk, Union Offices, All Saints', Manchester.
„ 29	Ramsgate—Chairs, &c.	Corporation	T. G. Taylor, Borough Engineer, Albion House, Ramsgate.

Complete List of Contracts Open — *continued*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	IRON AND STEEL:		
April 23	Bradford—Ironwork for Ornamental Gates and Fencing	Corporation	Town Clerk, Bradford.
„ 23	Torquay—Gas Pipes	Gas Committee	F. Chalmers, Engineer, St. Marychurch Gasworks, Torquay.
„ 23	Edinburgh—Pipes	Water Trustees	W. A. Tait, 72A George Street, Edinburgh
„ 23	Nelson—Pipes, &c.	Water Committee	J. Hartley, Waterworks Manager, Town Hall Nelson.
„ 23	London, E.C.—Railway Stores	Great Indian Peninsular Rly. Co.	48 Copthall Avenue, E.C.
„ 24	Walsall—Castings	Rural District Council	F. W. Mager, District Surveyor, Council Offices, Aldridge, Walsall.
„ 27	Bamford, near Sheffield—Pipes	Derwent Valley Water Board	E. Sandeman, Engineer's Office, Bamford, viâ Sheffield.
„ 28	Ilford—Tank, Steel Roofs and Floors, Boilers, &c.	Gas Company	Engineer, Gasworks, High Road, Ilford.
„ 28	Swadlincote—Hydraulic Mains, Retort Fittings	Swadlincote U.D.C.	G. B. Smedley, Engineer and Manager.
„ 30	Devonport—Stores	Gas Committee	S. E. Stevenson, Engineer, Gasworks, Devonport.
„ 30	Glasgow—Smith Work, and Manholes and Gratings	Corporation	Office of Public Works, 64 Cochrane Street, Glasgow.
May 2	Chelmsford—Fencing	Joint Hospital Board	A. S. Duffield, 96 High Street, Chelmsford.
„ 4	Macclesfield—Pipes	Rural District Council	J. Thorpe, King Edward Street, Macclesfield
„ 5	Exeter—Pipes	Council	City Engineer, 7 Southernhay West, Exeter.
„ 9	Egremont—Pipes, Iron and Steel, &c.	Wallasey Urban District Council	Engineer Gas and Waterworks, Great Float, Birkenhead.
„ 9	Egremont—Iron and Steel, &c.	Wallasey Urban District Council	Manager, Egremont Ferry, Cheshire.
June 15	Bangkok, Siam—Permanent-way Materials	Royal Siamese State Railways	Director-General, Gehots, Bangkok.
„ 15	Bangkok, Siam—Railway Stores	Royal Siamese State Railways	Siamese Legation, London.
	PAINTING AND PLUMBING:		
April 24	London—Repainting	Westminster Union Guardians	W. Lockwood, 36 Gerrard Street, Shaftesbury Avenue, W.
„ 27	Stratford-upon-Avon—Painting, &c	Corporation	R. Dixon, Borough Surveyor, Municipal Offices, Stratford-on-Avon.
„ 28	London, W.C.—Painting, Repairs, &c.	St. Giles and St. George Guardians, Bloomsbury.	J. Appleton, 57 Broad Street, Bloomsbury, W.C.
„ 30	Devonport—Lead Tube, Paints, Oils &c	Gas Committee	S. E. Stevenson, Engineer, Gasworks, Devonport.
„ 30	Glasgow—Painter and Plumber Work	Corporation	Office of Public Works, 64 Cochrane Street, Glasgow
May 4	Winwick, Warrington—Decorating Asylum Recreation Hall	Lancashire County Asylum Visiting Committee.	H. Ellis, Clerk, County Asylum, Winwick.
„ 4	Halifax—Painting, &c.	School Board	W. H. Ostler, Clerk, School Board Offices, Halifax.
„ 6	London, S.W.—Painting &c.	St. George's (Hanover Square) Guardians.	W. H. Chappell, Clerk of Works, Workhouse, Fulham Road, West Brompton, S.W.
„ 9	Egreemont—Paint, Oils, Lead-Pipe, &c.	Wallasey Urban District Council	Engineer, Gas and Water Works, Great Float, Birkenhead.
„ 9	Egreemont—Lead-Pipe Oils, Paints, &c.	Wallasey Urban District Council	Manager, Egremont Ferry, Cheshire.
„ 11	Wanstead—Painting, &c.	School Board	J. T. Brassey, 70-71 Bishopsgate Within, E.C.
No date	Llanbradach—Cleaning, Painting and Re-varnishing Chapel	——	Secretary, 19 High Street, Llanbradach.
	ROADS AND CARTAGE:		
April 23	London, W.—Granite Spalls	Kensington Gardens	J. H. Rutherglen, Clerk, Marloes Road, Kensington.
„ 23	Aboyne, Aberdeen—Quarrying, &c., Stones	——	J. Milne, District Road Surveyor, Aboyne.
„ 24	Frinton-on-Sea—Making-up Road	Urban District Council	T. W. Golds, Surveyor, High Street, Thorpe-le-Soken, Essex.
„ 24	London, E.—Granite Spalls	St. George-in-the-East Guardians	J. R. Brown, Clerk, Raine Street Old Gravel Lane, E.
„ 24	Walsall—Broken Slag, Granite, &c.	Rural District Council	F. W. Mager, District Surveyor, Council Offices Adridge, Walsall
„ 25	Bradford—Road Metal	Corporation	J. H. Cox, City Surveyor, Town Hall, Bradford.
„ 25	Horsforth, near Leeds—Materials	Urban District Council	R. R. Jones, Surveyor, Council Offices, Horsforth.
„ 25	Saffron Walden, Essex—Paving	Town Council	A. H. Forbes, Borough Surveyor, Saffron Walden.
„ 26	Denny Scotland Concrete Pavement	——	A. Hendry, Town Clerk, Denny.
„ 27	Uckfield—Materials	Urban District Council	C. Dawson, Clerk, Council Offices, Uckfield.
„ 27	Hanwell, W.—Sewering, Levelling Paving, &c.	Urban District Council	S. W. Barnes, Surveyor, Council Offices, Church Road West, Hanwell, W.
„ 28	Hambledon, near Guildford—Materials	Rural District Council	G. Lintott, Council's Surveyor, Cranleigh.
„ 29	Ramsgate—2 Tip Carts	Corporation	T. G. Taylor, Borough Engineer Albion House, Ramsgate.
„ 29	Desborough—Granite	Urban District Council	D. J. Diver, Surveyor, Council Offices, Desborough.
„ 29	Walthamstow—Street Works	Urban District Council	G. W. Holmes, Engineer, Town Hall, Walthamstow.
„ 30	Cramlington—Whinstone	Urban District Council	R. Nicholson, Clerk, Morpeth.
„ 30	Scarborough—Approach Road	Town Council	E. T. Beard & H. W. Smith, Engineers, Town Hall, Scarborough.
„ 30	Devonport—Cartage, &c.	Gas Committee	S. E. Stevenson, Engineer, Gasworks, Devonport
„ 30	Glasgow—Cartage and Paving Work, Materials, &c.	Corporation	Office of Public Works, 64 Cochrane Street, Glasgow.
„ 30	Pontlottyn, Glamorganshire—Roads and Drains	——	Gustard and Waddington, Tredegar Chambers, Bridge Street Newport.
May 2	Blaengwynfi—Private Street Improvment Works	Glyncorrwg U.D.C.	W. P. Jones, Surveyor, Council Offices, Cymmer, Port Talbot.
„ 4	Uttoxeter, Staffs—Materials, &c.	Rural District Council	J. Preston Surveyor, Woodlands, Uttoxeter.
„ 5	Bromley—Tar Paving	Urban District Council	Surveyor, Council Offices, Bromley, Kent.
„ 5	Bromley—Materials	Urban District Council	Surveyor, Council Offices, Bromley, Kent.
	SANITARY:		
April 23	Balfron, Scotland—Drainage Works	County Council	A. Forbes, 146 Buchanan Street, Glasgow.
„ 23	Aston Manor, Birmingham—Drainage Works	Urban District Council	G. H. Jack, Engineer, Council House, Aston Manor.
„ 23	Hipperholme, Yorks—Sewer	Urban District Council	J. Walsh and G. Nicholas, Surveyors, Museum Chambers, Halifax.
„ 24	Walsall—Stoneware Goods and Disinfectants	Rural District Council	F. W. Mager, District Surveyor Council Offices, Aldridge, Walsall.
„ 25	Salisbury—Disinfectants	General Purposes Committee	W. C Powning, Town Clerk, Municipal Offices, Salisbury.
„ 27	Manchester Drain Covers	Corporation	Secretary, Rivers Department, Town Hall, Manchester.
„ 27	Stanley, Durham—Scavenging	Urban District Council	J. T. Coulson, Inspector of Nuisances, Council Offices, Stanley.
„ 27	Basford—Sewers, &c.	Rural District Council	S. Maylan, Engineer, Public Offices, Basford.
„ 28	Winchester—Sewers	Corporation	W. V. Anderson, City Engineer, Winchester.
„ 29	Ramsgate—Stoneware, Pipes, &c.	Corporation	T. G. Taylor, Borough Engineer Albion House, Ramsgate.
„ 29	Mexborough—Sewer	Urban District Council	G. F. Carter, Surveyor, Council Offices Mexborough.
„ 30	Glasgow—Pipes and Sewer Bottoms, &c.	Corporation	Office of Public Works 64 Cochrane Street, Glasgow.
May 5	Bromley—Sewerage Works	Urban District Council	Surveyor, Council Offices, Bromley Kent.
„ 6	Burton-upon-Trent—Sewerage Works	Corporation	G. T. Lynam, Borough Engineer, Burton-on-Trent.
„ 9	Egremont—Stores	Wallasey U.D.C.	Manager, Egremont Ferry, Cheshire.
„ 9	Bridgend—Sewerage Works	Ogmore and Garw U.D C.	H. D Williams, Council Offices, Blackmill, Bridgend, Glam.
„ 14	Freshwater and Totland, I.W.—Sewerage Works	Isle of Wight R.D.C.	W. B. G. Bennett, Son and Berry, Engineers, Midland Bank Chambers, Southampton.
	TIMBER:		
April 23	Southampton—Timber	——	Officer-in-Charge of Stores, Ordnance Survey Office, Southampton.
„ 27	West Hartlepool—Sleeper Blocks, &c.	North Eastern Railway Co.	Secretary, York.
May 9	Egremont Timber	Wallasey U.D.C.	Manager, Egremont Ferry, Cheshire

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &C.	BY WHOM ADVERTISED.
April 23	Northwich—Architect to be appointed for Hospital	——	——	A. Fletcher, Clerk to Hospital Committee, Northwich.
„ 30	Fenton, Staffs—Library	£60, £30.	£1 1s.	S. A. Goodall, Surveyor, Town Hall, Fenton, Staffs.
„ 30	Sunderland—Alterations to Hall	£100, £50, £25.	£5.	J. W. Moncur, Borough Engineer, Town Hall, Sunderland.
May 1	Manchester—Infirmary	——	——	W. L. Saunder, General Superintendent, Royal Infirmary, Manchester.
„ 13	Stockton-on-Tees—Girls' High School	£25, £15 10s.	——	C. J. Archer, 77 High Street, Stockton-on-Tees.
„ 30	Gillingham, Kent—Public Swimming & Slipper Baths	£20, £10, £5.	——	F. C. Boucher, Clerk to Gillingham U.D.C., New Brompton, Kent.
June 30	Blackpool—Picture Poster	£100, £50, £30, £20.	——	C. Noden, Corporation Advertising Manager, Town Hall, Blackpool.
No date	Swansea—Church Hall	——	——	L. Daniel, 6 St. James's Gardens, Swansea.
„	Sheffield—122 Artizans' Dwellings	£50, £30, £20	£1 1s.	C. F. Wike, City Surveyor, Sheffield.

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BUILDER ASSISTANT. Age 26. Nine years' experience; prime costs, ledgers, abstracting and billing up quantities, and other office routine; good references.—F. B., 18, Kennington Park Road, S.E.

GENERAL FOREMAN seeks ENGAGEMENT. Town or country. Trade, carpenter and joiner. Good references. Age 46. Good draughtsman, and manager of all trades. Total abstainer.—M. B., 37, Clarence Road, Wood Green, N.

MACHINST, wants JOB, to TAKE CHARGE of MILL, or work Spindle. 20 years' experience with Machines in Trade and Builders' Mills (Joiner).—H. G., 34, Cumberland Road, Higham Hill, Walthamstow.

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STUDENT, R.I.B.A., desires engagement as Architect's Junior Assistant. Working drawings, details, &c. Assist with quantities. 4 years' experience; aged 24. Small salary; further experience required.—F. B. F., 4, Euston Place, Leamington.

Appointments Vacant.

GENERAL FOREMAN Wanted in Profit-Sharing Company. Must be thoroughly competent, and agree to apply for some shares within three months of appointment. Prospectus on application.—State age, references, and wages, THE HASLEMERE BUILDERS, Ltd., Haslemere, Surrey.

GENTLEMANLY, well-educated YOUTH Wanted (about 16), in Architectural Surveyor's Office. Must be quick at figures. Good opportunity to learn. No premium. Small salary.—Address, with full particulars, F., care of 358, Clapham Road, S.W.

LAND SURVEYING and LEVELLING. Eight Lectures (Wednesday evenings) and Eight Field Lessons (Saturday or Monday afternoons at student's option), commence April 29th. Fee £3 3s.—G. A. T. MIDDLETON, 19, Craven Street, Strand, W.C.

MONUMENTAL and GENERAL MASON to manage Country Yard. Must be capable and energetic.—Apply, stating age, full particulars, and salary required, J. C., Masonry Works, Hemel Hempstead, Herts.

QUANTITY SURVEYOR requires gentleman's son from school as Junior Assistant, good chance to learn profession. Apply, in writing, to E. D. N., 9, Gray's Inn Square, W.C.

REPRESENTATIVE Wanted, with established connection in the Building Trades, for West London district.—Address, stating age, experience, and salary, ARTHUR LEE & BROS., Ltd., Marble, Slate, and Granite Merchants, Bristol.

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The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.

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ARTISTIC and PRACTICAL First-class DRAUGHTSMAN prepares designs, working drawings, and perspectives in colour or ink, on moderate terms.—ARCHITECT, 6, King's Road, Kingston-on-Thames

CORRESPONDENCE invited with Manufacturers, &c., Builders' Specialities, with view Sole Agency in South Durham and North Yorkshire, by Merchant with good Builders' connection. — Apply, AGENT, Box 2441, BUILDERS' JOURNAL Office, 9, East Harding Street, Fetter Lane, E.C.

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QUANTITY SURVEYOR of wide and varied experience is prepared to arrange with Architects for the preparation of Bills of Quantities on mutual terms. Time and accuracy guaranteed.—Box 2340, BUILDERS' JOURNAL Office, 9, East Harding Street, Fetter Lane, E.C.

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LIFTS.—WM. AUG.'S GIBSON, LTD., formerly President of American Elevator Co., later Managing Director Otis Elevator Co., Ltd. Temple Bar House, 28, Fleet Street, London, E.C.

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Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

Beverley.—For the work and material required in erection of a retort-bench and retort settings on the regenerative system, with all the necessary furnace fittings, bench mountings, &c., for the Gas Committee:—

R. & G. Hislop, Paisley	£1,382
W. & J. Jenkins, Retford	1,320
Gibbons Brothers, Dudley	1,197
F. C. Sugden & Co., Leeds	1,125
R. Dempster & Sons, Elland	1,120
Drakes, Ltd., Halifax	1,115

Bristol.—For the pulling down and rebuilding of the "Perseverance" public-house, Feeder Road, Bristol, for the Bristol Brewery, Georges & Co., Ltd. Messrs. Walter S. Paul & James, AA.R.I.B.A., architects and surveyors, Eagle Insurance Buildings, Baldwin Street, Bristol. Quantities by the architects:—

J. Perkins & Son	£2,219
L. Thomas & Son	2,175
E. Clarke, Fishponds	2,125
F. Chown	2,085
W. H. Cowlin & Son	2,083
W. & J. Bennett*	1,920

* Accepted. [Rest of Bristol.]

Caerphilly (Wales).—For the construction of about 6,200 lineal yards of 18in. and 21in. stoneware and iron pipe sewers in the Rhymney Valley, together with all manholes, flushing chambers and other appurtenances, for the Caerphilly Urban District Council. Mr. Alfred O. Harpur, engineer and surveyor:—

T. Rees, Ely, Cardiff	£16,093	12	6
W. E. Willis, Ystrad Rhondda	16,053	0	0
W. T. Davies, Duke Street, Cardiff	15,544	10	6
W. Jones & Sons, Neath	14,067	9	2
M. Harding, Caerphilly	13,942	8	3
E. Powell, Pontypridd	13,237	17	8
A. J. Rossiter, Caerphilly	13,222	5	4
J. E. Evans, Cardiff	12,953	13	8
F. F. Howells, Caerphilly	12,689	8	4
Barnes, Chaplin & Co., Cardiff	12,653	5	2
J. Riley, Cheltenham	12,448	10	0
G. Rutter, Barry	12,447	15	2

Conway.—For the construction of a length of 2,654yds. (more or less) of stoneware and cast-iron pipe sewers, manholes, junctions, ventilators, &c., for the Sanitary and General Purposes Committee. Mr. F. A. Delamotte, engineer, Town Hall, Conway:—

Mooney & Co., Manchester	£1,573	10
T. Rowlands, Northwich	1,545	6
R. L. Roberts,* 24, Back Mostyn Street, Llandudno	1,473	13

* Accepted.

Glasgow.—For (A) laundry machinery, (B) painting and paperhanging at western district hospital, Oakbank, off Possil Road, for the Glasgow Parish Council:—

Painting.

A. Jordan	£1,689	1	3
T. Lawrie & Co.	1,6'7	14	8
MacFarlane & Smith	1,598	11	8
Hobbs & Samuels	1,446	14	0
A. Bankier & Co.	1,380	13	9
J. Paul & Sons	1,316	2	2
W. Horne	1,260	19	6
McCulloch & Co.,* 154, West Regent Street	1,169	13	8
J. Duncan	1,116	13	8
J. Edgar	1,110	0	10
J. McLuskie	1,067	17	0
P. McKerracher	977	17	2
C. Paton	961	1	2

Laundry machinery.

D. & J. Tullis,* Kilbowie Ironworks, Clydebank	1,125	10	0

* Accepted. [Rest of Glasgow.]

Ilford (Essex).—For alterations and additions to Nos. 1 and 2, Grove Villas, Ilford Lane, Ilford, Essex, for Mr. A. Bernstein. Messrs. B. Bailey & Co., architects and surveyors, 52, Bedford Row, W.C.:—

S. Hart, Manor Park	£515
T. Collins, Ilford	£405
A. B. Hill,* Forest Gate	387

* Accepted.

Ilford (Essex).—Accepted for the construction of a portion of Thorold Road, Ilford, Essex, for the Ilford Park Estates, Ltd. Messrs. B. Bailey & Co., architects and surveyors, 52, Bedford Row, W.C.:—

Parsons & Parsons, Ilford	£227	6

Itchen.—For public street works in part of Avenue Road and part of Manor Road, for the Urban District Council. Mr. T. A. Collingwood, surveyor to the Council:—

Mott & Sons, Staines	£861
J. C. Trueman, Swanley, Kent	480
Streeters & Todhunter, Godalming	469
F. Osman, Southampton	463
F. W. Pettit,* Itchen	426

* Accepted.

Itchen.—For private street works at Woolston, for the Urban District Council. Mr. T. A. Collingwood, surveyor to the Council:—

Mott & Sons, Staines	£9,524
J. C. Truman, Swanley Kent	5,825
Streeters & Todhunter, Godalming	5,657
F. Osman, Southampton	5,187
F. W. Pettit,* Itchen	5,122

* Accepted.

Kettering.—For the erection of an electric light and power station and refuse destructor, and also a chimney shaft for the same, on site near the Rockingham Road, for the Urban District Council:—

Electric light buildings.

F. Barlow	£6,660	0	0
G. Henson, Wellingborough	6,639	0	0
J. Parnell & Son, Rugby	6,512	0	0
A. Faulks, Loughborough	6,400	0	0
C. & F. Henson	6,298	0	0
A. Lewin & Son	6,179	0	0
A. Bamford	6,095	0	0
E. Brown & Son, Wellingborough	5,994	0	0
Kettering Co-operative Builders	5,941	0	0
E. Haycock & Sons,* Great Glen, Leicester	5,947	0	0

Destructor buildings.

J. Parnell & Son	£2,318	0	0
A. Faulks	2,260	0	0
F. Barlow	2,035	0	0
Kettering Co-operative Builders	2,045	0	0
A. Lewin & Son	2,020	0	0
G. Henson	2,014	0	0
C. & F. Henson	2,010	0	0
A. Bamford	2,004	0	0
E. Brown & Son	1,944	10	0
E. Haycock & Sons*	1,900	0	0

Chimney shaft.

W. Neil & Co., London	£2,902	17	3
Blackburn, Starling & Co., Ltd.,	1,592	0	0
Nottingham	1,592	0	0
E. Brown & Son	1,467	10	0
J. Parnell & Son	1,427	0	0
A. Faulks	1,390	0	0
G. Henson	1,250	0	0
E. Haycock & Son*	1,143	15	0

* Accepted. [Rest of Kettering.]

Liverpool.—For the erection of a new workshop, Jordan Street and New Hall Street, Liverpool, for Mr. H. D. Morgan. Mr. J. H. Havelock Sutton, architect 101, Dale Street, Liverpool:—

J. W. Weeks & Son, Kirkdale	£1,292	14
William Walker, Liverpool	1,190	0
Isaac Dilworth, Wavertree	1,135	0
F. W. Mayor & Co., Liverpool	1,109	0
Bullen Brothers & Son, Liverpool	1,081	0
I. & G. Chappell, Liverpool	1,063	16
Joshua Henshaw,* Chatham Street, Liverpool	1,040	0

* Accepted.

London, E.—For the erection of twelve houses at Bissom Road, Stratford, E. Mr. J. M. H. Gladwell, architect, Essex House, High Street, Stratford, E.:—

A. Kendall	£5,980
C North	4,272
H. E. Jones	4,264

Melbourn.—For the erection of eight cottages at Melbourn, for Miss May Bowman. Mr Harvey H. Sale, architect and surveyor, 105, High Street, Bedford:—

Gimson, Royston	£1,953	0
Warton & Dunstal, Bedford	1,820	0
Ward & Sons	1,803	14
Coleman, Bedford	1,800	0
Laughton, Bedford	1,785	0
Jacklin, Royston	1,778	0
Negus, Bedford	1,747	0
Freeman, Bedford	1,737	0
Taylor	1,589	0
Bailey	1,490	0
Ibbott, Bedford	1,350	0

New Shoreham (Sussex).—For the supply and delivery of about 10,000yds. of cast-iron pipes, for the Steyning West Rural District Council. Mr. Frederick Slaughter, engineer, West Street, New Shoreham:—

S. Mason, Cambridge	£2,283
J. & S. Roberts, West Bromwich	2,098
Macfarlane, Strange & Co., Glasgow	1,931
Laidlaw & Son, London	1,901
Cochrane & Co., London	1,895
Stanton Iron Company, Nottingham	1,861
Staveley Iron Company, Chesterfield	1,822
J. Abbott & Co., London	1,820
Biggs, Wall & Co., London	1,786
Sheepbridge Iron Company, Sheepbridge	1,719
D. M. Stevenson & Co.,* Glasgow	1,698

* Accepted.

New Shoreham (Sussex).—For the laying of about 10,000yds. of water-main, &c., for the Steyning West Rural District Council. Mr. Frederick Slaughter, engineer, West Street, New Shoreham. Quantities by the engineer:—

Pedrette & Co., Finsbury Park	£2,498
J. & T. Binns, Croydon	2,445
A. Wilcox, Hants	2,256
A. G. Osenton, Reading	2,121
S. Mason, Cambridge	2,088
Jenkins, Leamington	1,717
J. G Pickard, East Grinstead	1,656
W. H. Holman, Brighton	1,652
E. Nuttall, Manchester	1,563
J. W. Dean, Margate	1,541
P. W. Berttin, Chertsey	1,460
J. A. Ewart, Westminster	1,453
W. A. Small, Hayward's Heath	1,434
Peerles, Dennis & Co., Eastbourne	1,387
A. E. Nunn, Tenterden	1,374
E. H. King, Worthing	1,210
M. S. Kitteringham, Waltham Cross	1,195
J. H. Macdonald, Cirencester	1,134
W. L. Meredith, Whitecroft, near Lydney	1,099
C. Mayo, Hayward's Heath	1,094
Streeters & Todhunter,* Godalming	1,057

* Accepted. [Engineer's estimate, £1,059.]

Sheffield.—For the erection of five dwelling-houses and conveniences in Loxley New Road, Malin Bridge, Sheffield, for Messrs. the Directors of Thomas Rawson & Co., Ltd. Messrs. Hall & Fenton, architects and surveyors, 14, St. James's Row, Sheffield. Quantities by the architects:—

J. Bertram, Wadsley Bridge	£1,610	15	0
J. Robertson, Hillsborough	1,494	0	0
R. S. Saville, Hillsborough	1,225	2	6
R. Charlesworth, Hillsborough	1,213	17	0
W. Ainsley, Sheffield	1,123	0	0
J. Reed, Sheffield	1,103	0	0
C. Earl, Norton Woodseats	1,030	0	0
M. Hancock,* 71, Roebuck Road, Crookesmoor	1,081	0	0

* Accepted.

Staple Hill (near Bristol).—For the pulling down and rebuilding the Post Office Tavern, Staple Hill, near Bristol, for the Bristol United Breweries, Ltd., Bristol. Messrs. Walter S. Paul & James, AA.R.I.B.A., architects and surveyors, Eagle Insurance Buildings, Baldwin Street, Bristol:—

G. Downs & Son	£3,800
J. Perkins & Son	3,295
L. Thomas & Son	3,260
E. Clarke, Fishponds	3,191
F. Chown	3,189
Adams & Jefferies, Oldland Common	3,130
W. & J. Bennett*	2,980

* Reduced estimate of £2,800 accepted.

[Rest of Bristol.]

(*Continued on* p. xviii.)

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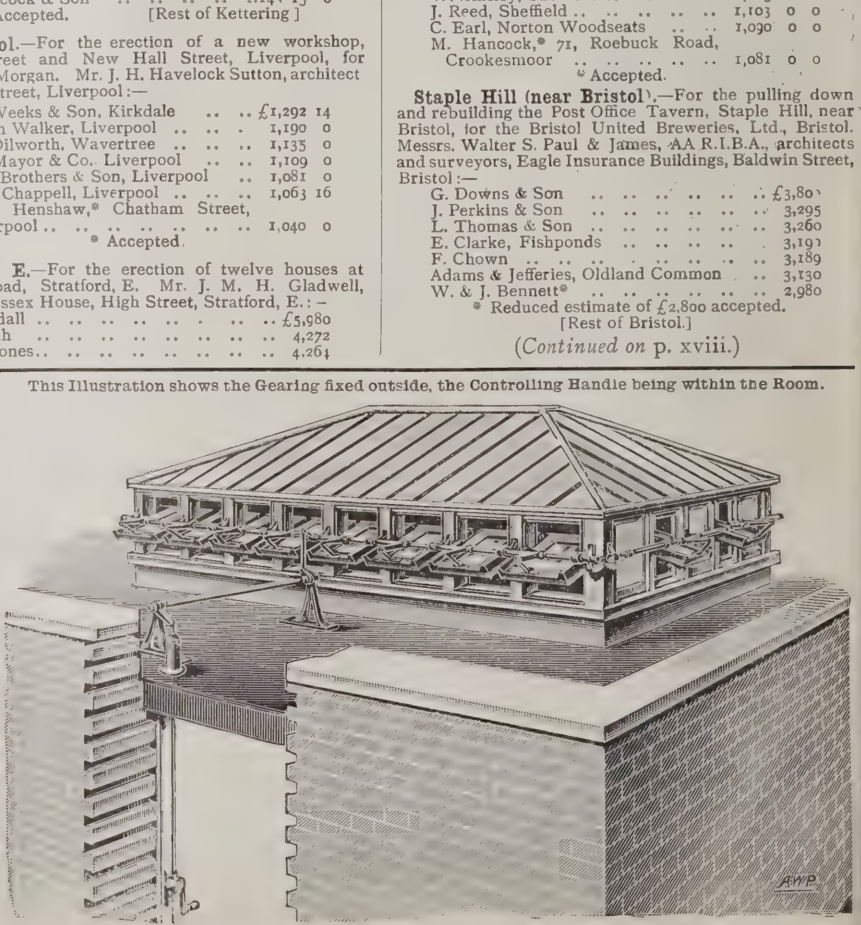

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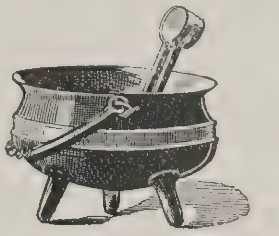

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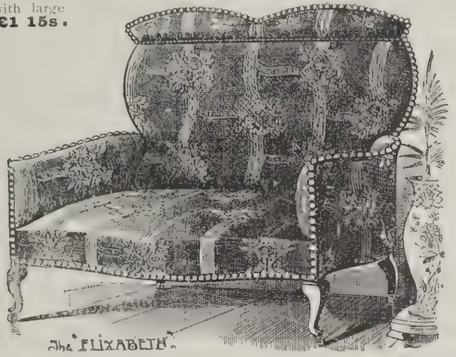
Coal Tongs to match, black and brass, **1 11** per pair; black and copper, **2 6** per pair.

7/6.
CHAIRS finished in coverings to match any of the settees or easy chairs - **7/6**


The ELIZABETH.

The "Elizabeth" Settee, well upholstered, spring stuffed and covered with artistic tapestry, finished with large oxidised copper nails - - - - **£2 19s. 6d**

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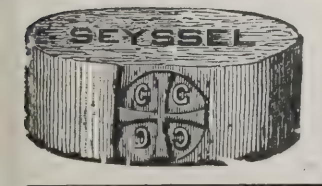

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WILLESDEN PAPER & CANVAS WORKS, Ld., Willesden Junction, N.W.

TENDERS (*cont. from* p. xvi.)

Midsomer Norton (Somerset).—For the carrying out of contracts 1 and 2 in connection with proposed works of additional water-supply, for the Urban District Council. Mr. William F. Bird, engineer, Midsomer Norton :—

	Contract No. 1.	Contract No. 2.	Total.
J. E. James	£ 882 10 0	£4,668 12 0	£5,550 2 0
S. Wood	1,249 13 8	4,208 15 0	5,458 8 8
W. Thomas	1,147 10 0	3,769 7 0	4,916 17 0
A. Webb	894 7 10½	3,187 16 9½	4,082 4 8
Wills & Sons	998 0 0	2,997 0 0	3,995 0 0
J. Bird	963 16 4	3,016 3 8	3,980 0 0
W. A. Catley*	795 0 0	3,161 0 0	3,956 0 0
Bevan & Sons	—	3,568 10 6	—
Smith & Marchant	—	3,244 17 9	—
J. Macdonald	—	2,972 7 10	—

[Engineer's estimate, £3,933 7s. 6d.]

* Recommended for acceptance.

Oxshott (Surrey).—For the erection of detached cottage residence, for Mrs. A. Martin-Cobbett. Mr. S. Doddimeade Edmunds, architect and surveyor, 79, Victoria Street, St. Albans :—

A. F. Mitchell, New Malden	£1,115
H. Joyce, New Malden	880
C. Horsell, Weybridge	820
Cropley & Sons, Leatherhead	802
A. Gower,* Cobham	775
Vail & Williamson,† St. Albans	734

* Modified and accepted. † Withdrawn.

St. Albans.—Accepted for the erection of a detached residence, Clarence Road, St. Albans. Mr. S. Doddimeade Edmunds, architect and surveyor, 79, Victoria Street, St. Albans :—

Gooodchild & Sons, St. Albans £560

St. Albans.—For the erection of proposed Engineering Works. The Camp, for Messrs. J. W. Flower & Co. Mr. S. Doddimeade Edmunds, architect and surveyor, 79, Victoria Street, St. Albans :—

Goodchild & Jeffry, Radlett	£2,512 0
Boff Brothers, Park Street	2,475 0
Whibley & Jervis, St. Albans	2,420 6
Miskin & Sons, St. Albans	2,406 0
E. Dunham, St. Albans	2,357 10

Watford.—Accepted for the erection of detached residence, Whippendale Road, Watford, for Mr. R. John. Mr. S. Doddimeade Edmunds, architect and surveyor, 79, Victoria Street, St. Albans :—

Henry Brown, Watford £799

Builders' Notes.

The Brickmakers of Wigan and the neighbourhood have struck for an advance of 1d. per 1,000; they require also that the brick shall be moulded to one size, namely, 10in. long, 5in. broad and 3in. thick. This, we believe, will make a difference of from 4d. to 6d. per 1,000.

Tasteful and Spirited.—Three workmen employed to do some building alterations in the basement of a Newcastle restaurant cut a hole through the brick wall of the wine cellar and helped themselves to eleven bottles of brandy and six of champagne. They have been sent to hard labour for two months.

A New Paving.—Mr. A. W. Moore, of 12, Chatham Place, Hackney, has invented a new system which is being tried by the Corporation of Westminster. The ordinary wood-block road has the obvious defects of slipperiness and insanitation. Mr. Moore relies for a road foundation on perforated iron trays or plates, upon which wood blocks specially prepared for drainage are laid. The paving can also be used for platforms, floors and stairs.

A Novel Invention in Water Taps has just come under our notice. It is a combination tap (Webb's Patent) owned by the Combination Tap Co., Ltd., of 24, Queen Victoria Street, London, E.C. This tap, besides being fitted with Webb's anti-splash arrangement, has also an easily-worked adjustment which at once converts it into a hydrant, thus furnishing every householder with a fire extinguisher, and one that will stand the pressure of the main. It will also be found useful for gardens, stables, warehouses, &c.

From South to North.—It is commonly supposed that the clannishness of the Scot is impervious to any save Scottish enterprise, but there is a vein of common-sense in the keenest Scot which leads him to do business with anybody who can supply a good article, and although Mr. John Stones, of Ulverston, is not a Scotsman, he has recently secured a valuable contract and placed a large run of his swivel partitions in Edinburgh itself—in St. Cuthbert's Roman Catholic Schools, where about 3,500ft. of these partitions have been fitted. This is only one selection of many similar contracts recently carried out by Mr. Stones.

Amalgamation of Tramway Contractors.—The firms of Messrs. Askham Brothers and Wilson, of the Yorkshire Steel and Engineering Works, and Messrs. Edgar Allen & Co., Ltd., of Imperial Steel Works, Tinsley, Sheffield, have amalgamated. Messrs. J. & P. Askham, who have carried the former works on so successfully for the past thirty-seven years in all kinds of tramway works, are now retiring from the active management of the same, and although the works are to be taken over by Messrs. Edgar Allen & Co., they will continue to be under the direct management of Mr. Fred Bland, who for many years past now has been so closely connected with all tramway work. He remains with the new firm as the director of the Tramways Department, so that the works under the existing staff will continue to be carried on as heretofore, only considerably enlarged at Tinsley, where Messrs Allen & Co. have purchased some 17 acres of land whereon to erect large and extensive new works for the grappling more effectually with their increasing trade in electric tramways, which is now of such a magnitude that there is hardly a corporation or leading tramway contractor who do not use their patent automatic spring points, which are so greatly in demand in the laying of all tramway lines.

Improving Calcutta.—A great scheme of improvement is being considered by the Commissioners of Calcutta. About 16 miles of new roads are contemplated in the scheme. Of these 9½ miles 60ft. wide are to run north and south and 6¼ miles 40ft. wide east and west. These roads will cost Rs. 4,78,00,000. The roads alone would transform the city. Calcutta needs nothing so much as wide clean roads driven, regardless of obstacles, through her congested quarters.

America's Greatest Brick Arch is stated to be in the Eastern States, under the Metropolitan Museum of Art in Central Park, and spans the great Croton water-pipes, which are 6ft. in diameter and ten in number, lying side by side. The dimensions of the arch are about 35ft. span with 6ft. rise and the brick ring is composed of eighteen rowlock courses of brickwork laid in thick grout, and bonded like a brick wall every sixth course. Its length is approximately 300ft. and it contains over 3,000,000 bricks. This arch was most laborious to build because the men were obliged to work on their knees on top of the centre and flat courses of the rowlocks.

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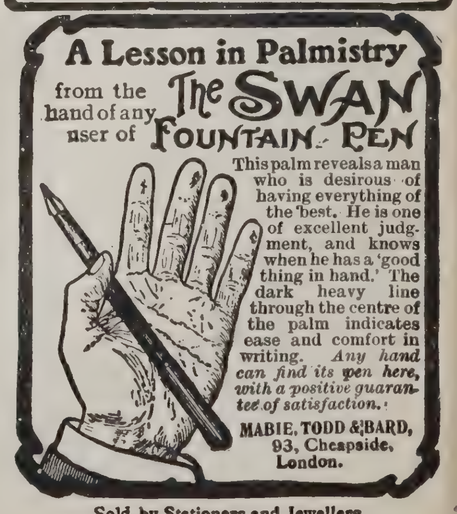

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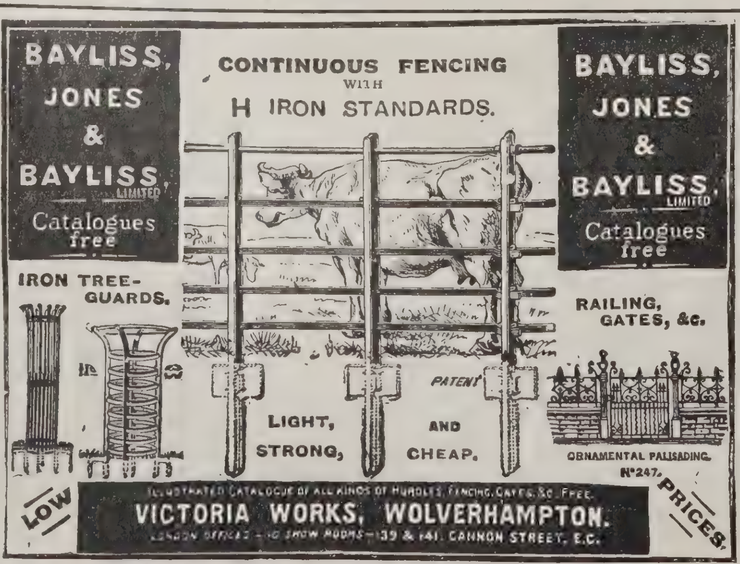

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THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD.

April 29, 1903. Vol. 17, No. 429.

9, East Harding Street, E.C.

Clifford's Inn. We fear that the fate of Clifford's Inn is sealed. On May 14th it will be put up for sale, and there seems little doubt that very soon afterwards the housebreakers will be at work on this charming relic of Old London, to be followed by builders of offices and business premises. While admitting the requirements of modern London, we cannot help feeling that there is hardly sufficient justification for pulling down all these old buildings: indeed, some landlords seem to delight in clearing them away on the first opportunity, often more as a means of increasing their revenues than for reasons of sanitation or public need. On the other hand, we cannot sympathize with that class of outside artists who live in the past and protest at the mere mention of any modern alteration. With the formation of so necessary a thoroughfare as that from the Strand to Holborn, cutting through a portion of London whose old-fashionedness has been preserved by being out of the swirl of business streets, it is inevitable that something must be sacrificed; but not every demolition has such good grounds as this. We doubt whether there are any such justifiable reasons for pulling down Clifford's Inn. Many protests have been raised, not the least important being that the Record Office will become hemmed in and darkened by the new buildings. The proceeds of the sale are to be handed over to the Attorney-General for the purposes of "legal education"—that is, the giving of law lectures (Clifford's Inn is the oldest of the now disestablished Inns of Chancery, which were law schools to prepare students for the larger Inns of Court), but Mr. St. John Hankin observes that every sensible person must know "the whole system of lectures became antiquated and ridiculous after the invention of the printing press, and that only at universities and similar relics of a dead past have they the smallest claim to survive." Clifford's Inn, with is dull red-brick houses, its old hall and stony court, recalls the days of Dr. Johnson more vividly than any other part of London, and we shall be sorry to lose it. The old hall (in which the Society of Designers were wont to meet amidst their legion of spidery chairs) is chiefly memorable as being the place where Sir Matthew Hale and seventeen other wise and patient judges sat, after the great fire of 1666, to adjudicate upon the claims of landlords and tenants of the burned houses.

Wren and the Gordon Riots. The "Daily Chronicle" in a review of Miss Harting's book, "Catholic London Missions from the Reformation to the year 1850," describing the Sardinian Chapel in Sardinia Street, Lincoln's Inn Fields, which is soon to be demolished for the purpose of forming the new street between Holborn and the Strand, asserts that the chapel was burned and wrecked during the Gordon riots, and was rebuilt by Wren at the public cost. The critic appears to have been oblivious of the fact that the Gordon riots took place in 1780, and that as Wren died in 1723 it was impossible for him to have had any hand in the rebuilding of the chapel, which presents no feature of interest beyond that the interior was decorated some years ago from a design by the late John F. Bentley, the architect of the new Roman Catholic Cathedral at Westminster.

The Question of Taste. Drawing-room parlance has made the word "taste" rather a by-word, for it has been affectedly adopted as a convenient mask for the want of it. But true taste becomes one of the most important as it is the most absent matters in modern buildings. It denotes a sense of fitness and good proportion. Generalities about proportion and the relation of solid to void are for ever being harped upon, but they are very little appreciated, though there is perhaps nothing which architects lack more than this sense of good proportion. It is not insisted upon in this country as in France, and, though the comparison cannot be held solely applicable to that cause, the admirable proportion of the buildings of Paris and the absence of it in the majority of London buildings furnishes a very marked contrast: and for this reason alone one may say that the French architects have better taste than our own. In saying this, however, let us not be misunderstood. There are scores of English architcets capable of designing fine buildings for important thoroughfares of great cities who never have the opportunity of doing so: not that such an opportunity is altogether a golden one—there are always difficulties and complexities to hamper the architect—still, the buildings are often great piles capable of producing great effects. That these effects are so rarely realized is due to the fact that the architects commissioned to design these large blocks of city buildings are generally devoid of taste. We call to mind several huge new structures in the leading thoroughfares of London which are a disgrace to English architecture. To see the most puny detail and tasteless ornament on these proportionless façades makes one think that here at least the architect is nothing more than a tradesman. Business ability and architectural talent are not often found together, but we can demand something less atrocious than these buildings.

The National Trust. Mr. Bodley, we notice, has been chosen to fill the place of the late Mr. Penrose as the representative of the Royal Institute of British Architects on the Council of the National Trust—or, to give its full title, the National Trust for Places of Historic Interest or Natural Beauty. The Trust does its work quietly but, nevertheless, effectively. In our issue for November 27th, 1901, we published an illustration of the old post-office at Tintagel, an interesting building of the fourteenth century, put in repair by the Trust in 1895 at the expense of a number of artists and others interested in its preservation, and we now learn that the Trust has sufficient funds to purchase the little building; so that its future is assured. The Trust is protesting against the outrageous proposal to construct a harbour district railway along the East Cliff at Hastings. Everyone familiar with this beautiful spot will heartily endorse such a protest, and we hope there will be sufficient opposition to the Bill before Parliament to prevent any such disfigurement being carried out.

A So-Called Crozier. The so-called crozier discovered by the rector of Alcester, Warwickshire, in the rectory garden, and purchased by the British Museum for £100, is not a crozier but the ivory head of a Tau-cross staff of English workmanship, dating from about the year 1020. It is conjectured that the staff-head was made for Evesham Abbey, and it is now on view in a case in the centre of the Mediæval Room at the British Museum. The carving is of singular beauty and is very little injured. It is stated that the rector of Alcester intends to devote the money he has received for his find towards the restoration of the chancel of his church, but it is to be hoped that he will confine himself to necessary repair and will not lend himself to anything so mischievous as restoration, which is now almost universally discredited.

THE NEW WORKS AND OFFICES OF THE BRITISH WESTINGHOUSE COMPANY AT MANCHESTER.

THE WESTINGHOUSE WORKS.

THE history of the construction of the new works of the British Westinghouse Electric and Manufacturing Co. at Trafford Park, Manchester, is of particular interest as a record of what British labour can do when efficiently directed. The foundation-stone of the works was laid on August 3rd, 1901, by the Lord Mayor of London, and, despite their magnitude, actual manufacturing operations commenced within twelve months of that date. We doubt if even our Transatlantic cousins can show a performance to beat this one, carried out with British labour and material under the direction of a Scottish building manager having American training, with perhaps a dozen young assistants. The material used in the work of construction comprised 11,000,000 bricks, 17,000 tons of steelwork, 9,000,000ft. of timber and 300,000ft. of glass roofing. All the shops (seven in number) are of steelwork bricked in, the upper floors and roof principals being supported on built-up steel columns set on solid concrete foundations and tied with heavy cross girders. Runways for great electric cranes of up to 50 tons capacity and 90ft. span are provided high up in the main bays of all the shops, and in some cases in the side bays also. Largest and most interesting is the machine shop, part of which is seen in our illustration behind the high-office building. This is in five aisles, numbered in order, A, B, C, D and E, of which B and D are clear from floor to roof, a height of about 100ft. Each aisle is about 90ft. wide by nearly 1,000ft. long. A, C and E have two working floors, and in addition a mezzanine floor, mainly occupied with lavatories. The flooring of the upper storey consists of stout planking laid on edge, the planks being held together by long through bolts; over this is laid a light wooden flooring in the usual way. This system, which is distinctly novel, provides an excellent foundation for machine tools of moderate size, eliminates vibration, and is much more fire-resisting than many nominally fireproof structures. Almost the whole of the roof-surface is glazed, the glass used having been cast on wire-meshing, which so strengthens it that, though comparatively thin, a man can safely walk over it. Even if it should break, the wire-meshing would prevent any large pieces falling to injure the workers beneath. Small condensation gutters are fitted inside at the bottom of each pane. Excellent provision has been made for ventilation, the foul air being forcibly expelled by fans and fresh air (in winter warmed by passing over steam pipes) drawn in. Both in summer and winter the entire works are maintained at a suitable temperature. Lighting is by electricity throughout, Westinghouse Bremer arc lamps, which give a powerful light of very agreeable colour, being used in the main bays, and incandescent lamps elsewhere. The office building has six floors, with about 75,000 sq. ft. of floor space. The entrance halls are panelled and the staircases cased entirely with white marble. All furniture and work is of polished oak, and each office is provided with a combined lavatory and wardrobe cabinet. Each room also contains a clever device consisting of a thermometer and a small lever connected to a pointer travelling over a scale. This lever controls the main radiators of the room, and the device is so arranged that the temperature can be kept constant at any desired value. One end of the building is of fire-resisting construction, and in this are stored the drawings, records and other valuable property. The total area of the site owned by the British Westinghouse Co. is 130 acres, of which at the present time about 20 acres are built upon. The position is one admirably suited for a large manufactory, being closely connected to the railway system and bounded on two sides by the Bridgewater Canal, while the Manchester Ship Canal is close at hand. Adjoining the works a town of more than 500 houses has been built by the Trafford Park Dwellings Co.; this town is rapidly growing, and affords accommodation for a large number of the operatives employed in the Westinghouse Works. The houses have electric light, bathrooms with hot and cold water, and gardens. The whole estate is run on teetotal lines—there is no public-house within a mile and a half of the shops. The works were designed by Mr. Thomas Rodd, architect, of Pittsburg, and carried out under the direction of Mr. J. C. Stewart, manager of the construction department of the British Westinghouse Co., who has already acquired a most enviable reputation as a "hustler."

A new Roman Catholic Church in East Ham has been erected.

The International Society of Sculptors, Painters and Gravers has leased the New Gallery, Regent Street, for the seasons of 1904–5 and 1906; and the Society's first exhibition in these Galleries will be opened in January next. The president of the International is Mr. Whistler, and among the members of the committee are Messrs. Guthrie, Lavery, Thaulow, Sauter, Sullivan, Pennell, Walton, Hemy, Crahall, Stirling Lee, Priestman and Harry Wilson.

THE "MORNING POST" AND "GAIETY" BUILDINGS.

THE premises of the "Morning Post" at the corner of the Strand and Wellington Street, London (which, together with the Gaiety Theatre and Restaurant, are about to be demolished in forming the new crescent), were completed in 1893, from the designs of Mr. H. O. Cresswell, on the site of the old "Field" and "Queen" offices and adjoining the old building of the "Morning Post" which previously existed at 12, Wellington Street, and which was incorporated with the new building when complete. The principal object of the extension was to obtain space for new machinery and to accommodate the staff of the advertisement and manager's departments, who had previously been housed on the opposite side of the street in the old wings at each side of the entrance to the Lyceum Theatre; but in addition to this the extension required a complete reorganisation of all the various departments so as to bring them into proper relation with each other. In the basement was placed the machinery and on the ground floor the advertisement and cashier's departments, on the first floor the manager's department, on the second floor the editorial department with caretaker's rooms over, and on the top floor the composing and readers' rooms, with the stereotyping department just below, in the old building. The whole of the buildings were of fireproof construction on Fawcett's system, and were very substantially erected, as there was no idea at the time they were built that they would be likely to be pulled down within ten years. When the new Holborn to Strand Improvement scheme was introduced by the County Council Lord Glenesk, as proprietor of the "Morning Post," opposed the scheme in Parliament, and opposed it so successfully that the County Council, to get rid of the opposition, offered to reinstate the existing buildings on a new site as closely adjoining the old one as possible, and similar terms were subsequently obtained by the Gaiety Theatre and Restaurant and at a later date by Short's, Ltd. The new premises will be erected on the triangular piece of ground bounded by Exeter Street on the north, by the new street on the east, and by Wellington Street on the west, and will be the work of a foreign architect.

The Gaiety Theatre was erected in 1868 under the direction of Mr. C. J. Phipps. It occupies the site of the old Strand Music Hall. The internal decoration was first done by Mr. George Gordon, and there was a frieze over the proscenium designed and painted by Mr. H. S. Marks, 30ft. long and 4ft. 6in. deep, representing a mediæval king and queen, with their courtiers, watching the performance of a masque. The building is of brick, arranged in coloured bands here and there on the wall surface and over the window heads: while the capitals of the columns are foliated in early Gothic character. The theatre is an interesting example of the Gothic Revival. The new Gaiety Restaurant and Theatre is being erected opposite the old one, and will face the new "Morning Post" building to be erected on the other side of the crescent.

MODERN TERRA-COTTA AND FAÏENCE.

By J. MILLER CARR.

A MEETING of the Society of Architects was held on Thursday last at St. James's Hall, Piccadilly, when a paper on "Modern Terra-Cotta, Constructional Faïence and Ceramic Mural Decoration" was read by Mr. J. Miller Carr (of Doulton's).

Mr. Carr said that the history of modern terra-cotta should, perhaps, begin with the works of Coad, Blanchard & Blashfield, and he exhibited some fragments of pieces made by them at Lambeth more than 100 years ago. The figure of Britannia on the dome of the Liverpool Exchange is also an example of Lambeth manufacture of about that date; and though exposed to very severe ordeal from the acid fumes of the district and the full force of sea air, he believed the figure was in a perfect state of preservation. The dressing above the ground floor to the Sun Office at Charing Cross may be mentioned as a little-known example of Blashfield's work, and the entrance gateway to Sion House, Isleworth, is another example of work done more than 100 years ago.

Mr. Carr continued :—The one idea of all the makers of that period was to produce a clever and exact imitation of stone—truly an unworthy motive; but as to their success my reference to the Sun Office will suffice, as I think it probable most of those present will have accepted that as Portland stone. The early part of the past century was a time when all kinds of imitations and frauds were not only tolerated but fashionable; and surely it is one of the most hopeful and wholesome signs of our times that these deceptions have lost their charm and no longer obtain any hold on the educated public.

We may say that the *true* modern use of terra-cotta began with the building of

The Natural History Museum

at South Kensington, and I think it is a remarkable achievement for an architect to have demonstrated so true a use of the material at his first essay on any such large scale. Perhaps someone will say the colour is raw and somewhat aggressive. It is true also that mistakes were made and manufacturers practically ruined by supposing that because the material could be made cheaper than stone that it could be made *ridiculously cheaper than* stone—but every good cause has had its martyrs, and I think it should be recognized that such a fine building, so suitable for its purpose and of such an enduring nature, was indeed a triumph as almost a first attempt to use a practically new material. I have heard it remarked that the Natural History Museum looks almost as clean to-day as when first built—surely a valuable quality in our dirty atmosphere. Much has been learnt since its erection, and many different kinds of material have been tried in the manufacture of terra-cotta; delicate shades of colour have been obtained by combining clays from widely separated localities, and generally the manufacture may be said to have reached a high state of efficiency. Still, after about twenty-five years, one has to say that a large number of the designs recently produced for this material are not nearly so well adapted to its characteristics as this early example.

Typical Buildings.

I propose now to call your attention to a few typical buildings gathered at random, which will serve to show a large variety of style and purpose, pointing out those characteristics which indicate special suitability of design to the material.

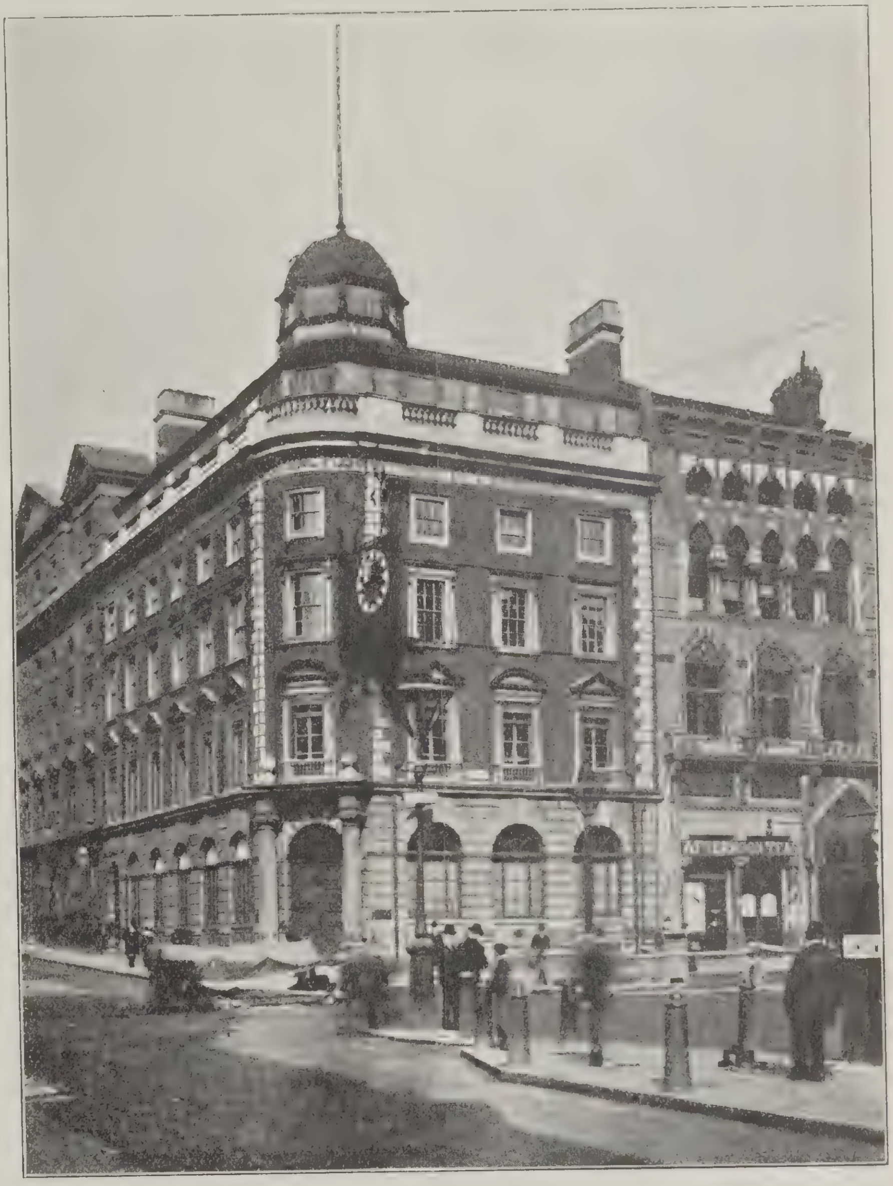
I suppose all will agree that it is a true principle, that the method of manufacture should be a motive in the design, that the architect should study his material, and that the most *characteristic* use of the material is its truest use.

Let us now look at the Victoria Law Courts at Birmingham, of which Mr. Aston Webb is the architect. The exterior is in red terra-cotta, with pleasing accidental variety of colour, but all red; whilst the interior is of a warm buff-colour. The design is exceedingly intricate, and both exterior and interior produce a very rich effect; but note what care has been bestowed on obtaining repetition of forms and features, while at the same time a different disposition of the features avoids monotony. The smallest details of this building repay the most careful study; everywhere it is evident that the material has been studied and that a true use of clay has been constantly kept in view; note the tracery in the great windows—how far it is removed in design from ordinary stone-like tracery.

The French Protestant Church in Soho Square, London, also by Mr. Aston Webb, is specially interesting in much of its interior work.

Now let us look at two of Mr. Collcutt's designs—Bechstein's in Wigmore Street and the Palace Theatre in Cambridge Circus. Note in both these designs how he gets shadow not by the projection of impossible cornices but by the arcaded method of producing deep recesses—note also the beautiful free modelled work. I am sorry to say the principal feature of the ground floor to the theatre, the entrance spandrels, are almost entirely hidden by the hideous iron shelter.

Next, in contrast to these examples by Mr. Collcutt and Mr. Aston Webb, let us look at a more classic type of building—Tootal's Warehouse in Oxford Street, Manchester, of which the late J. Gibbons Sankey, M.A., was the architect. We see at once that its great projecting cornices, its row of great columns and other similar features mark it as nothing like so suitable a design for the material as those examples previously noticed.



THE "MORNING POST" AND "GAIETY" BUILDINGS IN THE STRAND (ABOUT TO BE DEMOLISHED).

The Higher Grade Schools at Aston, near Birmingham (Messrs. Crouch & Butler, architects), have many features which are specially well designed for terra-cotta, but some that one cannot regard otherwise than forcing the material out of its proper field, as, for instance, the enormous projecting cornice about 3ft. over the wall face, with a modelled trophy in the pediment projecting about 1ft. more. This, of course, is hung up by copper rods and cramps.

A good example of an entire terra-cotta front for a city property is Mr. Charles H. Worley's building in New Cavendish Street, while for theatres Mr. Ernest Runtz's designs at Middlesbrough, Peckham and Hastings show a successful use of the material either alone or in conjunction with brickwork. The General Hospital at Birmingham, of which Mr. Henman is the architect, possesses many interesting and some unique features; notice the corridor ceiling in which two colours are used, red ribs with buff panels: the latter are about 2ft. sq. and 4in. thick, the usual hollow back being made the means of attachment to the iron girders, which are buried in concrete; the concrete then holds up the ceiling panels without any special preparations.

One of the most striking features of modern Birmingham is its ramification of covered arcades. The interior of the City Arcades (Messrs. Newton & Cheatle, architects) is in a special kind of faïence called Malchite, to which reference will be made when dealing with faïence materials.

A building which has attracted a good deal of attention is that recently completed for the Ocean Accident Guarantee Corporation, Ltd., in Temple Row, Birmingham. This is in a special kind of grey terra-cotta finished with a dragged surface. Messrs. Mansell & Mansell, of Birmingham, are the architects, and they were very anxious to avoid meaningless ornament.

Mr. A. H. Kersey is the architect of the front of Messrs. Redfern's premises in Conduit Street, London, W. The multiplicity of fine vertical lines in this building, where the pilasters are not only fluted and reeded but in addition have a **V** in each fillet and other special characters about the work, rendered it desirable to carry out nearly the whole of the work by what are called direct methods, *i.e.*, without the assistance of plaster moulds. The building was originally designed with a pair of fine architectural grotesques supporting the hood over the entrance, but these were considered by the clients to be "indecent," so that they were removed and trusses of a totally different kind introduced after the building was completed. The beautiful bas-reliefs were modelled by Messrs. Elmes & Son, of Kensington. The special construction of the hood over this entrance is interesting. It is formed of interlocking blocks which neutralize the outward thrust and make the hood into practically an elliptic lintel; at the same time ducts are provided in the thickness of the material for the passage of electric wires for the lamps in the coffered soffit.

Our list of terra-cotta buildings would be incomplete without examples of some of the great modern hotels, such as the Great Central (of which Colonel Robert Edis is the architect), and the Hotel Russell, by Mr. C. Fitzroy Doll, both being good examples of modern use. The great hotel is surely the most telling example of active life. It will therefore be an entire contrast to look at two resting-places of those who have passed from its busy scenes—Sir Henry Doulton's mausoleum at Norwood Cemetery, and the Stearne mausoleum at Nunhead. With these examples we pass from the consideration of general design to details of manufacture, and we will next consider the range of colour available for use in terra-cotta.

An immense range is possible, from a pale milky white, through all gradations of yellow and buff, to burnt sienna and red, and on through purple to the familiar blue brick; all of which gradations can be obtained from different kinds of clay and their combinations, and by different kinds of fire.

(Mr. Carr here exhibited four blocks, respectively buff, cinnamon, grey and red, each of which had been broken in two, and one half fired in a terra-cotta kiln and the other half in a blue-brick kiln—showing a surprising difference in colour.)

Almost all colour in terra-cotta is due to the oxidation of the varying quantities of iron contained in the different clays. It is possible by using an oxidizing fire to develop all the colour of which a particular clay is capable, or by what is called a reducing fire to repress the colour, so that a block which might be almost red under certain conditions of fire would be nearly white under others.

Now, as it is (fortunately, I think) practically impossible to exactly control the conditions within a large open-fired kiln, we have the natural result of variety of colour produced on the same material. This characteristic quality of the material—its charm *and the hall-mark so to say of its having been among the ardent tongues of the kiln flames*—is much better appreciated by architects to-day than it was fifteen years ago, when the profession almost universally specified uniformity of colour, which, of course, the manufacturer had to try to obtain, to the great detriment of the material.

Mr. Alfred Waterhouse did good service to the craft when he coined the phrase—that he desired to have on his building the results of the "accidents of the kiln."

But there are other possibilities by the admixture (at the time of grinding the clay) of certain mineral oxides, and with these various kinds of greys and greens and even pale blues can be obtained. Such stained "bodies" are naturally of the same colour all through. Any attempts at surface colouring other than by fired glazes are of course highly reprehensive and are not practised by firms of high standing.

Cost.

On the important question of cost it may be sufficient to state that this is of course controlled by suitability of design and the amount of repetition of the several forms employed. It may be taken as certain that where the design is fairly well suited to the material the cost will be below what it would be, say, in Portland stone, and where the design is specially suited and highly elaborated with many repeated forms, such as in the Birmingham Law Courts or the Natural History Museum, the cost will be very considerably below that of the same design in Portland stone with the carving included.

Terra-Cotta and Iron Construction.

We must now pass on to the most modern type of buildings—such as are either constructed entirely of glazed ware of various kinds or consist partly of glazed ware and partly of terra-cotta; and as these almost invariably combine some kind of iron or steel construction in their design and execution, I propose to take them together as a special class. The Birkbeck Bank and the large block of buildings attached to it, with the new extensive front in Holborn, is, I suppose, by far the largest example of an entirely glazed building in this country. The whole of the exterior is in Carrara ware, the colours used being fawn, sage-green and ivory. The method of manufacture of this material produces beautiful accidental gradations of colour, so that dead uniformity is never to be found on even a large surface of theoretically the same colour. The new building at the corner of Fleet Street and Fetter Lane, for the "Sheffield Daily Telegraph," is another large example of this ware, and in this case it is nearly all ivory white—but it is only needful to imagine the difference between the effect produced by the ivory Carrara, with its soft and pleasing gradation, and what it would have been in, say, white glazed bricks!

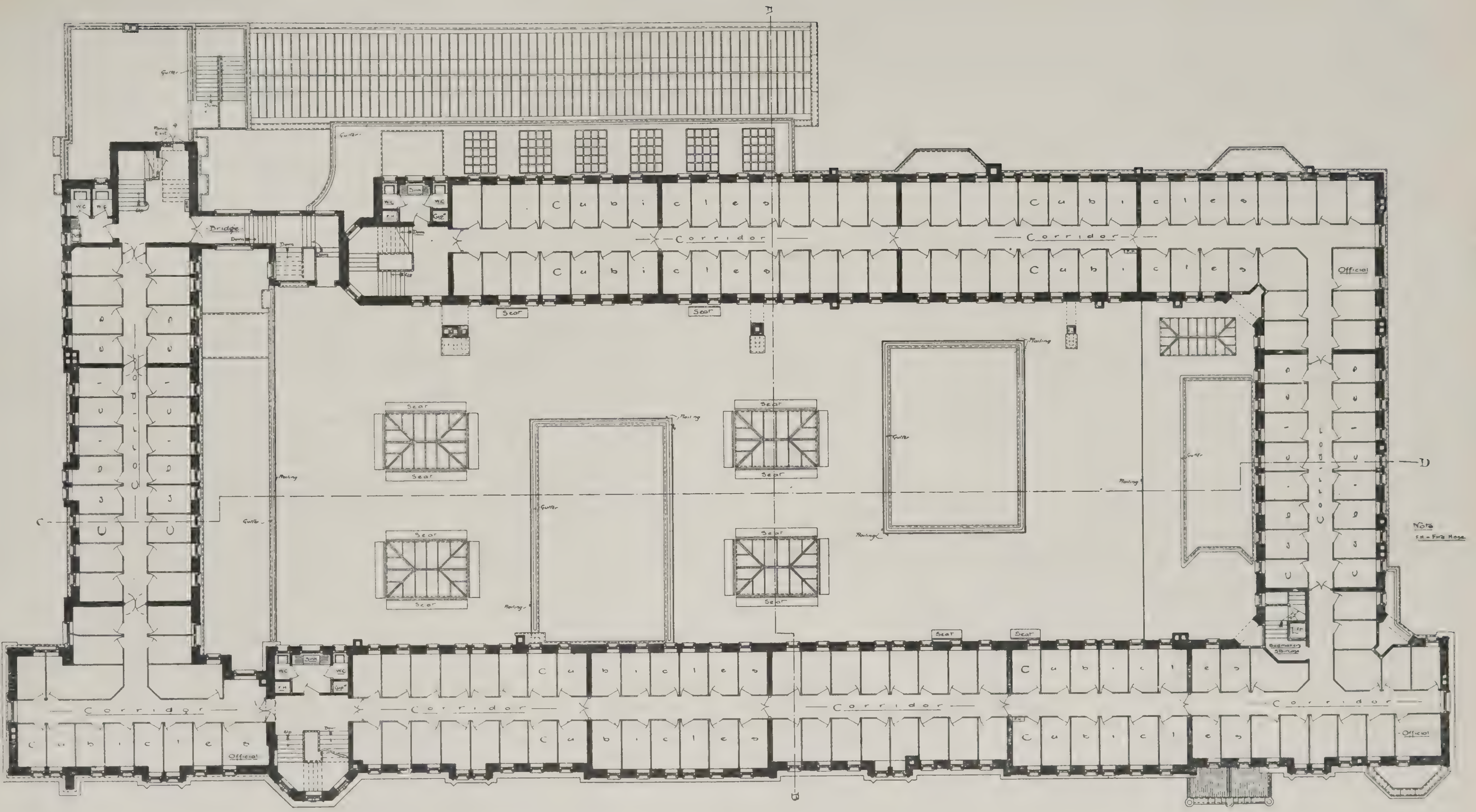
Referring again to the Birkbeck Bank, the whole of the interior of the banking-room, corridors, staircases and many of the principal rooms and offices are treated in various kinds of faïence, the boardroom being a specially fine example in purple, brown and cream colours. The panelled ceiling of this room, and also all the galleries to the bank, are covered with Doulton's patent safety-back tiles on their special preparation blocks, and have now stood the test of about seven years with no sign of weakness of any kind.

If you had told one of the grand old master-masons of the thirteenth or fourteenth century that you wanted a dome nearly 80ft. in diameter, and of a similar height, but could not allow any room to be taken up on the ground floor by abutments or buttresses, I think the good man would have regarded you as a cheerful idiot. But here these conditions are carried into actual fact, the dome being constructed of sixteen great steel stanchions, tapering from the floor and connected at their upper ends by a collar on which a gallery and lantern are carried. The stanchions and the spaces between them are covered with faïence, and the gore or carcase of the dome is of hollow terra-cotta blocks, light and strong, bonded together, with glazed panelled surface on the underside.

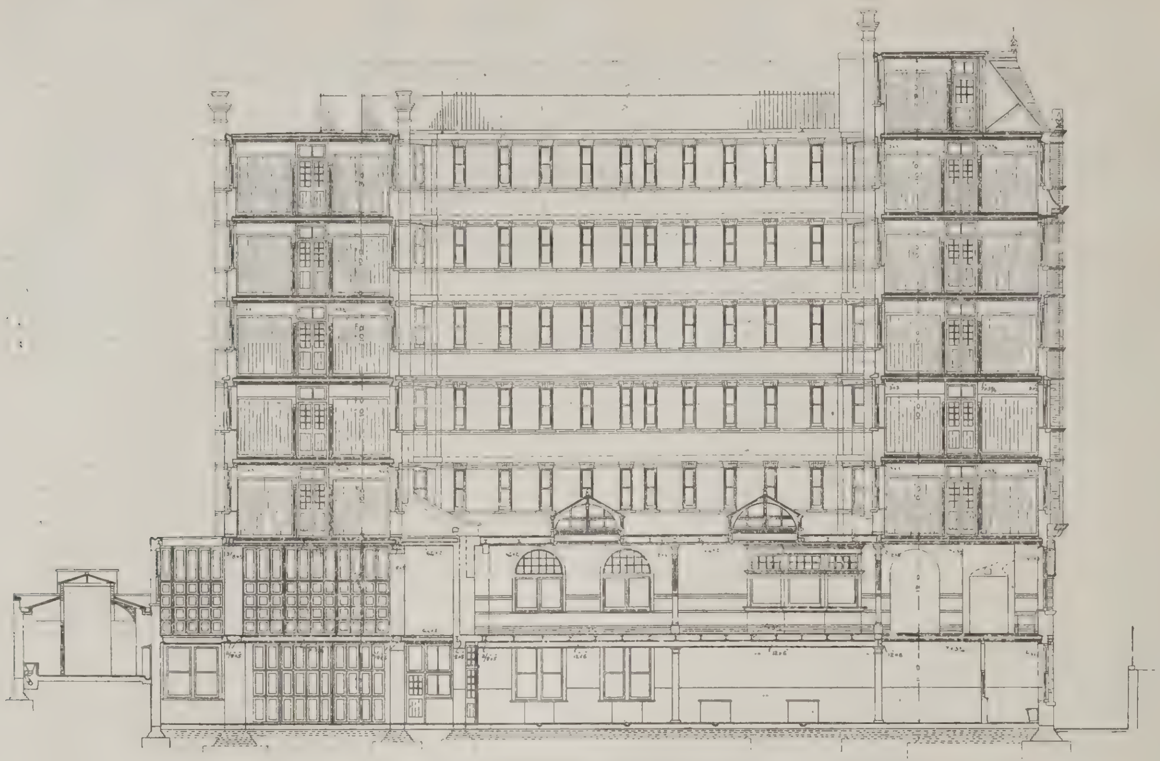
Work of this magnitude and importance naturally presents many interesting problems, in which the architect, engineer and ceramic expert may all have their share. Mr. T. E. Knightley, the architect, has certainly demonstrated the courage of his convictions on a large and important scale, and has shown in many points the true use of the materials chosen: for instance, in the great exterior columns to the upper parts of the Southampton Buildings front and to the great tower no attempt with large blocks has been made, but the plain entasized shaft between the enriched portions has been candidly built up of blue-green Carrara ware blocks not more than 10in. by 6in. on face, and consequently the broken colour produced by the difference of tone from block to block is pleasant, and at the same time substantial columns have been provided which carry the superstructure without the assistance of iron cores, except only those under the great tower.

The advantages offered by steel construction in connection with modern buildings are such, in lightness and strength, that they will doubtless demand increasing attention from architects and engineers, and I venture to say that there are no other materials so suitable as terra-cotta and glazed wares for casing such constructions. The usual practice is to let the engineer work out his structure in all its details, irrespective of the needful clothing which is to encase it, with the result that (his contract being already arranged) he cannot make such adaptations as are desirable to give the ceramist a fair opportunity of doing his best, and consequently the best is not done, but some kind of compromise.

In many parts of our country, if not in the streets of London, it will be found increasingly desirable to erect steel structures and to put the roof on perhaps before all the details of the elevation are arranged, and certainly new countries like many parts of South Africa need such structures in which the walls can be formed of rough local materials, so that while the internal parts are being completed materials to encase the steel structure can be obtained from England. These conditions are so novel that I think, if truly considered and architecturally treated, there should result a new style of architecture, the absolute growth out of the conditions. In this connection I may call your attention



ROWTON HOUSE, NEWINGTON BUTTS, LONDON, S.E : FIRST-FLOOR PLAN. HARRY B. MEASURES, F.R.I.B.A., ARCHITECT.



ROWTON HOUSE, NEWINGTON BUTTS, LONDON, S.E.: SECTION ON LINE A—B.

to a steel structure now in process of clothing with Carrara ware and terra-cotta in High Street, Leicester, the property of the architect, Mr. Arthur Wakerley, F.R.I.B.A., ex-president of the Leicester Society of Architects. The ground-floor piers are encased with blue-green Carrara ware for about 6ft. up, and then the general material of the clothing is grey terra-cotta relieved with light enrichments in cream colour. This bi-coloured effect is quite a new departure obtained by the use of two kinds of clay wedded as to skrinkage and worked together into the same block. The central bay is spanned by an elliptic arch of light section with the steelwork inside, and the spandrels are filled with light open work, modelled work, not suggesting that they carry the superstructure. It may also be noticed that there is no pretence of arch jointing in the long beams over the shop fronts, the material being simply treated as a casing of the steel girders.

Ceramic Mural Decoration.

I must now ask your attention to the most interesting part of my subject—ceramic mural decoration. I would first refer to what I consider to be one of the most courageous attempts yet made to get colour and interest into our street architecture. This building, erected above five years ago for Mr. Edward Everard, at Bristol, is a high-class printer's establishment, and was designed by Mr. W. J. Neatby, who at that time was one of Messrs. Doulton's principal artists. The whole front is in Carrara ware, with the figure subjects and other decorative features treated in slab mosaic. Now Bristol is a very dull sort of city and not easily aroused, but when the scaffolding was removed from this front the police had to regulate the traffic in Broad Street for two or three days. What I have to say about this front is that it is a genuine attempt to produce a building that can be read like an open book, just as the interesting fronts of the thirteenth and fourteenth centuries could be read by every passer-by. It is also essentially English, and not copied from any existing building at home or abroad. I know that the cry can easily be raised that it does not harmonize with its surroundings, but pull down the public-house on the one side, and the bank on the other, and give us a chance, and it would then be easy to bring them into harmony.

A profitable evening might be spent on tile-work alone, beginning with early examples and considering the work of the Moors at Granada, and so on to the more modern use, much of which I think fails in that *mural character* which all wall-decoration should have. If only we would learn from the ancient Egyptians and the Persians and Moors, we would not see that prevalence of worrying a wall with projecting mouldings, panellings, &c., but would return to broader decorative treatments in which the wall is allowed to retain its wall-like surface and the decorative effect is obtained by a suitable use of colour and pattern work. (Mr. Carr here, in conclusion, exhibited examples of Doulton ware tile-work in low tones of colour, strong rich blues and ever-varying effects, vitreous enamels, majolica glazes, Malachite and Fluxor, painted work, Carrara and Parian—an important example of painted Parian work is the new fish and game market at Harrod's Stores, Kensington, where twenty great roundels represent various kinds of sport.

A.A. OF IRELAND.

THE final meeting of the session of the Architectural Association of Ireland was held last week. Mr. F. G. Hicks, the outgoing president, delivered a valedictory address in the course of which he referred to the subject of examinations by the Royal Institute of the Architects of Ireland, which he was gratified to know was very favourably received by the members generally. He felt quite satisfied that the day was not so far distant when the profession in Ireland would have so benefited by the change as to reach the highest pinnacle of architectural renown, and he looked forward to some of them being awarded the Royal Gold Medal, which, he believed, had never yet been bestowed on a member of the profession in Ireland, though possibly it had been deserved. It was gratifying to know the Government contemplated spending some millions on technical education, and he hoped architecture and the other arts would not be lost sight of: a knowledge of them was quite as essential for the layman as for themselves, else how could they expect him to evince a desire for the beautiful or to appreciate it when he had got it? He looked forward to the time when the State would exercise some control over architecture and building. It might come with registration, if that ever came. He feared both were a very long way off; but Dublin bodies should not be allowed to entrust architectural work to incompetent men, to erect buildings with public money that would be an eyesore for a century—provided the buildings did not fall down. The lords of the soil should have no dealings with the jerry-builder or the jerry architect. If they wanted to develop building estates profitably, let them appoint an architect of repute, by whom all designs must be approved. He was glad to say this was done on some estates near Dublin, but he regretted that on other estates builders and architects were allowed to do just as they liked, with very disastrous results.

The following elections took place:—President, Mr. Charles H. Ashworth; vice-presidents, Messrs. H. Alberry and J. H. Webb; hon. treasurer, Mr. E. Bradbury; hon. librarian, Mr. T. Cullimore; hon. secretaries, Messrs. A. G. C. Millar and F. Hayes; hon. auditors, Messrs. P. F. O'Sullivan and G. R. Corringham; committee, Messrs. Hicks, Sheridan, O'Callaghan, M'Carthy, Beckett, Holloway, Mitchell, Geoghegan & Coleman.

A ROWTON HOUSE.

ROWTON HOUSE, Newington Butts, was the third of these "poor men's hotels" erected in London, the two preceding ones being at Vauxhall and King's Cross; since then a fourth has been built at Hammersmith and a fifth at Whitechapel. The Newington Butts house may be taken as typical of them all, though since its erection in 1897 some changes of detail have naturally resulted. The building is of pressed Leicester bricks and mingled gaults, with pinky-buff terra-cotta dressings. There are 815 cubicles. Latterly an extension has been made at one end and a laundry erected for dealing with the requirements of the various houses, and a building for disinfection purposes. A full account of this Rowton House will be found in our issue for March 20th, 1901.

Construction Notes.

Decay of Metals. An important contribution was made last week to the subject of the durability of metals in a paper read before the Institution of Civil Engineers by Mr. J. T. Milton, M.I.C.E., and Mr. W. J. Larke. The investigations seem to have been suggested chiefly by the consideration of the pitting of tubes of marine surface-condensers, but the principles brought out are not merely of importance in this direction only. The eating away of the metal into holes is called by the authors "corrosion," and where the metal retains its original form "decay." Chemical analysis of decayed portions shows that in copper-zinc alloys the process is mainly one of dezincification, or loss of zinc, while in cast iron, part of the iron (and possibly also of the manganese) disappears, the whole of the graphitic carbon remaining. A number of experiments have been made by Messrs. Milton & Larke, who summarize their investigations as follows:—(1) Decay was more frequent in metals which had a duplex or more complex structure than in those which were comparatively homogeneous. (2) Decay was due to a slower or less energetic action than that causing corrosion, and, moreover, it required an action which removed part only of the constituents of the metal, whereas corrosion removed all the material attacked. (3) Both decay and corrosion might result from chemical action alone, or chemical and electrolytic action combined. (4) Pitting, or intense local corrosion, was probably often due to local segregation of impurities of the metal; but it might also in some cases be due to local irregularities of surface or structure producing local irregularities in the distribution of galvanic currents. (5) In the case of brass exposed to sea-water, tin was distinctly preservative, while lead and iron were both injurious, rendering the brass more readily corrodible. The percentage of the latter elements should, therefore, be kept as low as possible in the case of all metal intended for purposes where contact with sea-water was inevitable. (6) With a view to obtain a minimum of corrosion, the internal surfaces of condenser-tubes should be as smooth and uniform as possible. (7) Experiments with an applied current showed that electrolytic action alone, even where exceedingly minute currents were in question, might result in very severe corrosion or decay. Every effort, therefore, should be made to prevent such action, by careful insulation of all electric cables. Where galvanic action is inevitable through the proximity of different metals exposed to the same electrolyte, the currents resulting should be neutralized by the application of zinc plates in the circuit, so arranged that they will be negative to both of the other metals.

Microscopic Study of Metals. These facts are but another proof of the importance of the investigations which have for some time been and are still being carried on as to the crystalline structure of metals. Various means are employed in these investigations, but chiefly the microscope. One great result has been shown, that the metals of commerce, *i.e.*, alloys or impure elementary bodies, are to be regarded as solid solutions, with their properties as continuous functions of their compositions. The investigations of Sir William C. Roberts-Austen have shown that steel is exactly analogous to an ordinary solution of a salt. The effects of the conditions of cooling upon the hardening of metals have been availed of from time immemorial, but it is only within the last few years that our knowledge has been placed upon a definite scientific basis, and that chiefly by the investigation, by microscopical analysis, of the changes in crystalline structure. It has been found that the tenacity of rolled steel varies inversely as the size of the grain. The size of the grains depends upon the temperature at which it is rolled. Rolling at too high a temperature seems to produce large grains, but within certain limits the higher the temperature of rolling the greater the strength and durability. But comparison can only be made in this way between steel of the same composition, for the greater the amount of carbon and manganese in steel the larger the grain will be and the greater its tenacity. Microscopic observations made by Prof. J. A. Ewing and Mr. W. Rosenhaim have also elicited the fact that when a metal under stress takes any kind of permanent set it yields by slips occurring on cleavage or "gliding" surfaces within each of the crystalline grains. Plasticity results from these slips, although the elementary portions of the crystals retain their primitive form and the crystalline structure of the metal as a whole is preserved. Resilience is the amount of energy which can be stored up in an elastic body and, if desired, given back again as useful work. The portion not given back as resilient work is spent in permanently deforming the body by causing the particles to move or slide over each other as stated, thus developing heat. The elastic deformation of a body does not develop heat. One thing seems certain from the investigations of recent years that the chemistry and physics of metals and metal alloys will soon have been so thoroughly studied that general rules can be evolved for practical use, so that it will be possible to proportion the elements and the heating to achieve almost any desired condition in the finished product.

H. K. D.

SHEFFIELD ARCHITECTS.

The annual meeting of the Sheffield Society of Architects and Surveyors was held last Thursday. The annual report was presented, showing a membership of 109. After recounting the work of the past winter session, it was stated that Mr. Holmes's lecture on "Local Taxation" and Mr. R. E. Leader's lecture on "Architects and Surveyors of the Past" had been printed for the use of members and others. No further action had as yet been taken by the Corporation in regard to the draft building by-laws. The report referred to the proposed competition for the Corporation's building scheme at Wincobank, and regretted the conditions issued by the Health Committee were not satisfactory. Satisfaction was expressed that provision would be made for architectural education at the School of Art and Sheffield University College. Messrs. E. M. Gibbs, T. Swaffield Brown and W. C. Fenton had been appointed managers of the School of Art in connection with the new Education Committee.—The following elections were made:—President, Mr. T. Winder; vice-president, Mr. E. Holmes; treasurer, Mr. F. Fowler; hon. secretary, Mr. W. C. Fenton. Council: Fellows—Messrs. P. Marshall, J. Smith, H. L. Paterson, R. W. Fowler, W. J. Hale, J. R. Wigfull and J. B. Mitchell Withers; Associates - Messrs. G. B. Flockton, C. M. Hadfield and C. F. Innocent. The following resolution was unanimously agreed to: "That inasmuch as the conditions of competition for artisans' dwellings at Wincobank require a partnership between architects and builders, which is unprecedented and undesirable in the interests of all parties, this meeting recommends members of this Society to unanimously abstain from competing, unless that and other unsatisfactory conditions are altered so as to meet with the approval of the Council of this Society."

Views and Reviews.

Tarsia.

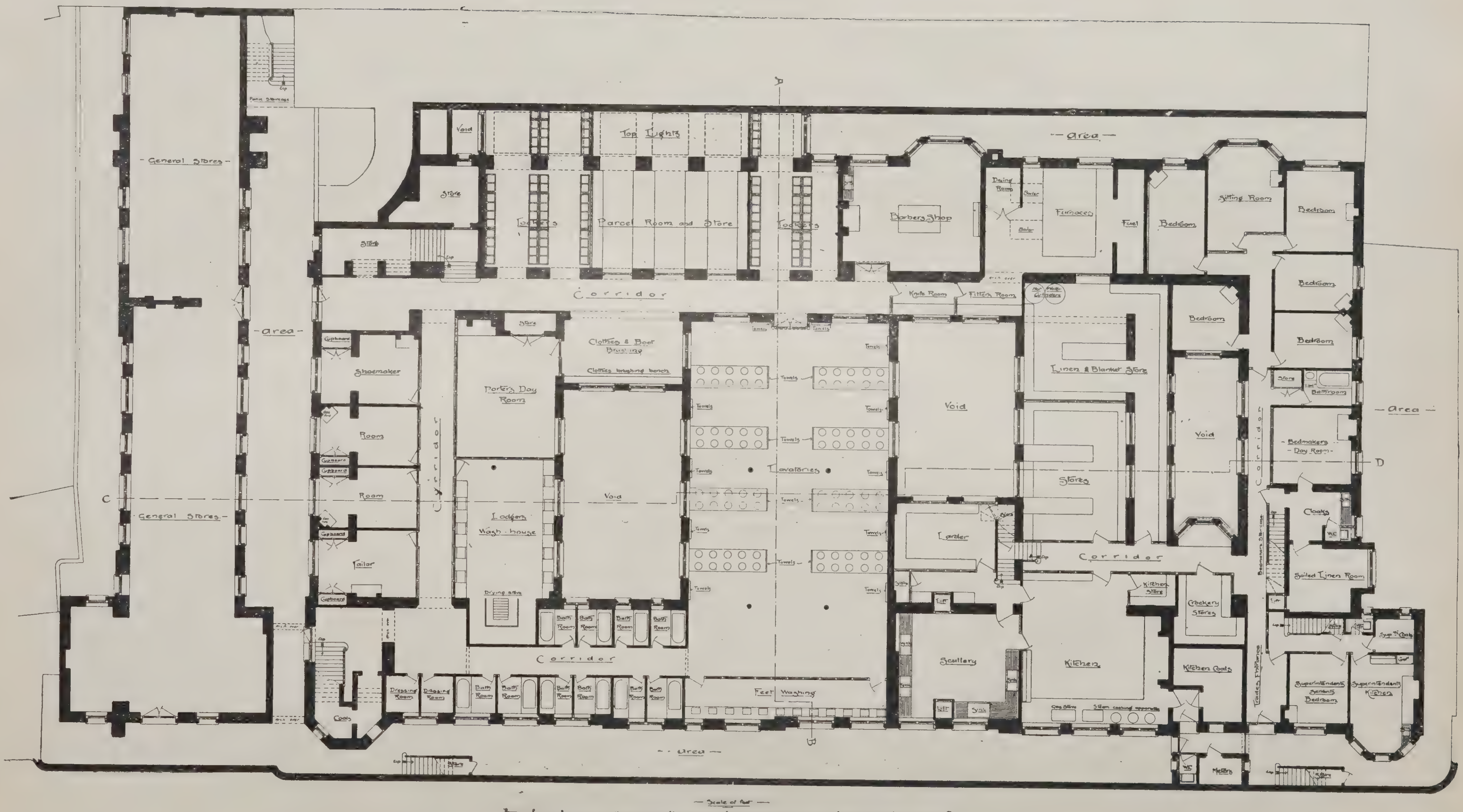
This book appears opportunely at a time when renewed attention is being given to intarsia and marquetry, more especially as it is the only book in English dealing exclusively with the subject. Besides studying the best examples to be found—chiefly in Italy—the author has consulted the numerous treatises published abroad and gives a list of them in his preface. The greater part of the book is devoted to a history of intarsia, the remainder being occupied by a description of the processes of manufacture, the limitations and capabilities of the art, and workshop receipts: the whole being fully illustrated from photographs and drawings. Intarsia is properly a solid inlay with wood or other material, while marquetry is the more modern practice of cutting several sheets of differently-coloured thin wood superimposed, the pieces being interchanged so as to get varieties of ground and design. Inlay, of course, goes back to antiquity—it was done by the Assyrians and Egyptians and its use continued in Greek and Roman days: but intarsia proper is not found till mediæval and Renaissance times. Siena was the cradle of Italian carving and inlaying: in the cathedral there, and at Orvieto as well, tarsia was made about the middle of the thirteenth century. Of the works that followed in Florence, Perugia, Venice, Lucca, Pavia and other Italian cities, of the cloistered intarsiatori and their pupils, and of the work done in Spain, Germany, Holland, France and England, we have not space to deal: they are all very adequately treated in this book.

Processes of manufacture are similarly considered from past to modern times, though the author is descriptive and comparative rather than historical. "At the commencement of the Renaissance the fancy of the intarsiatori overflowed in the most graceful arabesques, which are perfectly suited to the material and are often executed with absolute perfection, and these may perhaps be held to be the most entirely satisfactory of their works, though not the most marvellous. The ambition of the craftsman led him to emulate the achievements of the painter, and we find, after the invention of perspective drawing, views of streets and other architectural subjects, which are not always very successful, and the representation of cupboards the doors of which are partly open, showing objects of different kinds on the shelves, which are often rendered with the most extraordinary realism, when the means adopted are considered"—a realism which was accentuated by Fra Giovanni da Verona's discovery of acid solutions and stains and the practice of scorching the wood for shading. With the introduction of the fret-saw and the resulting counterchanging of ground and design, marquetry took a more commercial aspect, but much modern work shows how destructive the ease of this duplicating process has become, for the durability of marquetry very largely depends on the close fitting together of the pieces, instead of which they are often ill fitted, packed between with a filling material, and the surface lavishly polished.

This work is the first of a series for the craftsman: other volumes by the same author will deal with mural painting and mosaic and marble inlay.

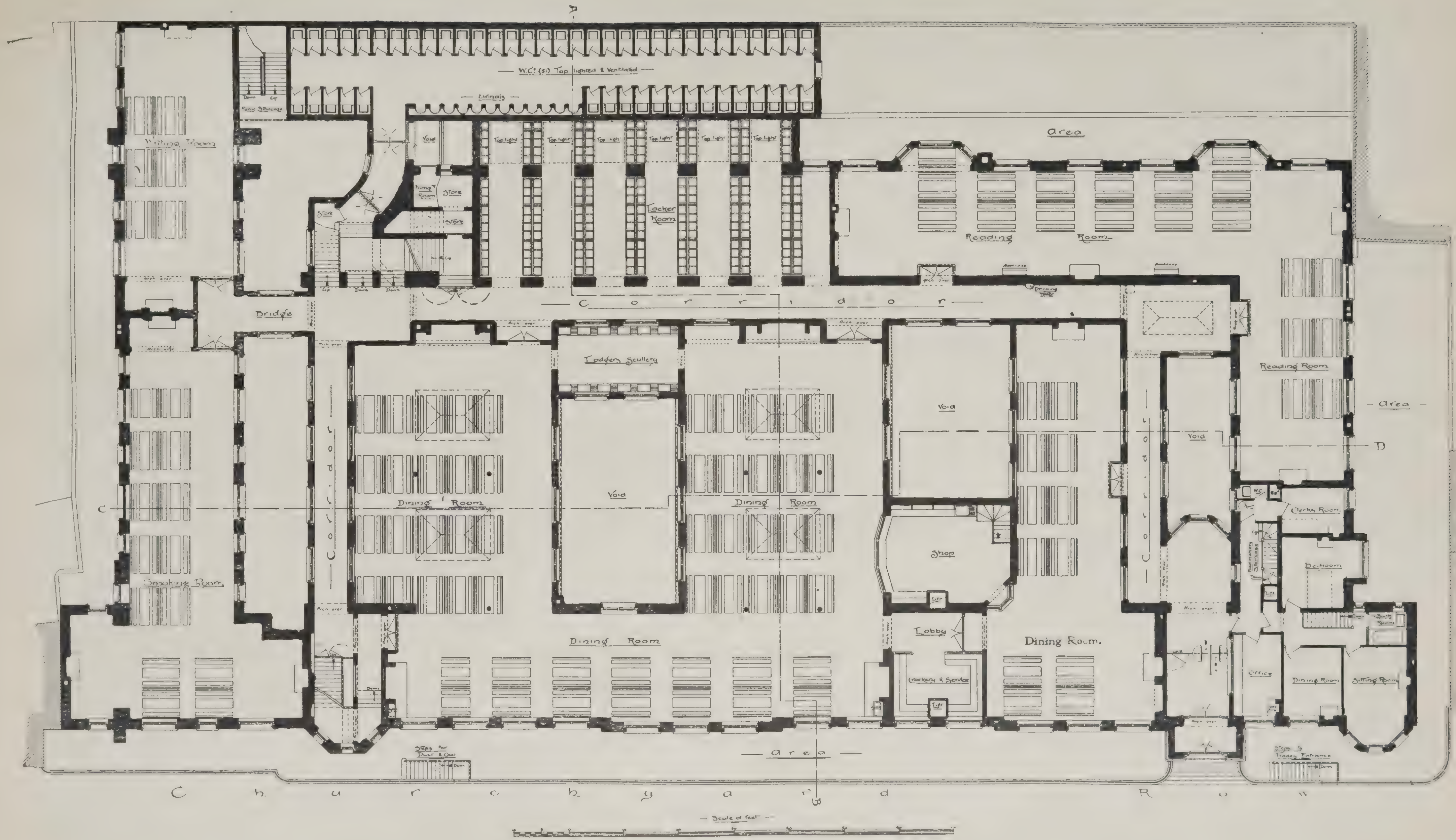
"Intarsia and Marquetry," by F. Hamilton Jackson, R.B.A., Examiner to the Board of Education in Principles of Ornament. London: Sands & Co., price 5s. nett.

Southwark Bridge.—The Lord Mayor of London stated last week that the improvement of Southwark Bridge was under consideration, and that it might result in the rebuilding of that bridge at an expenditure of between £300,000 and £500,000.



ROWTON HOUSE NEWINGTON BUTTS, LONDON S.E.: BASEMENT PLAN. HARRY B. MEASURES, F.R.I.B.A., ARCHITECT.

THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, April 29th, 1903.



ROWTON HOUSE, NEWINGTON BUTTS LONDON, S.E.: GROUND-FLOOR PLAN. HARRY B. MEASURES, F.R.I.B.A., ARCHITECT.

Keystones.

Mr. Aston Webb's next "At Home" as P.R.I.B.A. will be held on May 11th, when a collection of drawings by the late W. Eden Nesfield will be on exhibition.

The Architects' Registration Bill was introduced by Mr. Atherley-Jones into the House of Commons last Friday and read a first time.

A Memorial Window to London Scotsmen who fell during the war in South Africa has been erected at the Church of St. Columba, in Pont Street, Belgravia, by Messrs. Powell & Sons.

A Sequel to the Colney Hatch Fire.—The Works Committee of the Metropolitan Asylums Board have accepted estimates for the demolition of temporary wards at the South-Eastern and South-Western Hospitals at a cost of £43 and £89 10s.

The Whitley School Board Competition has been won by Mr. W. H. Knowles, of Newcastle-on-Tyne. Messrs. Cackett & Burns-Dick have been awarded the second premium of £40, Mr. Stephen Wilkinson the third premium of £20, and Messrs. Armstrong & Wright the fourth special award of £10.

Knossos.—Mr. Macmillan publishes a telegram from Mr. Arthur Evans announcing important discoveries at Knossos, in Crete, including a double flight of steps on the west of the north court to the palace. Considerable extension of work is entailed by these developments, and the managers of the Cretan Exploration Fund desire to raise another £2,000.

St. Mark's Campanile.—The first stone of the new Campanile of St. Mark at Venice, the building of which has been entrusted to the architect, Signor Luca Beltrami, was laid on Saturday. The tower is to be a replica of the former one. About £60,000 has been collected in Italy to bear the cost, and Sir Edward J. Poynter has forwarded £1,000 as the Royal Academy's contribution to the rebuilding.

Rochdale's Victoria Memorial.—The plans of Messrs. Woodhouse & Willoughby, of Manchester, have been accepted for a new nurses' home on the site of the Grammar School, Sparrow Hill. Nine sets of plans were sent in for the competition. Mr. H. Littler, of Preston, the county architect, was the assessor. The second premium of £20 was awarded to Mr. Jesse Horsfall, of Todmorden, and the third of £10 10s. to Messrs. Butterworth & Duncan, of Rochdale.

Archæological Discovery in Crete.—The Italian Archæological Mission has discovered near Herakleion, in Crete, on the site of ancient Phæstos, a magnificent palace and various objects of exceptional interest analogous to those observed at Knossos. The objects include twelve bronze statuettes, metal vases with repoussé ornament, painted vases and several tablets with inscriptions in the undeciphered Knossos character. The excavations will be continued.

The New Baltic and Shipping Exchange in St. Mary Axe, which was opened last week, covers an area of nearly one acre. On the ground floor is the large central hall, which has an extreme length of 152ft. and a width of 136ft. The whole of the front in St. Mary Axe, up to the first floor, is in polished Norwegian granite, above which there is a series of polished granite columns with carved capitals surmounted by a pediment. Above the exchange are four floors of offices approached by two entrances, staircases and lifts. The whole of the work has been carried out by Messrs. George Trollope & Sons from the designs of Mr. T. H. Smith, the architect.

A new Independent Church at Ilkeston is to be erected from designs by Mr. H. Tatham Sudbury, architect, of Ilkeston.

Rowston Church, near Digby, has been restored under the direction of Messrs. W. Watkins & Son, architects, of Lincoln.

The Royal School of Art Needlework, Imperial Institute Road, S.W., will be opened to-day by H.R.H. the Prince of Wales.

Change of Address.—Mr. G. H. Paine, architect and surveyor, of 6, Stoke Newington Road, Kingsland, N., has taken more convenient offices at No. 62, Moorgate Street, E.C.

The New York Stock Exchange has been opened. Its site makes it the costliest building in the city, with the exception of the Tweed Ring Court House, the construction of which enriched and ruined Tammany.

The Grand International Fire Brigades Council will, at the invitation of the British Fire Prevention Committee, hold its biennial meeting in London on July 11th in connection with the impending International Fire Prevention Congress which opens on July 7th, most of the members of the Council having expressed their intention of accepting the invitation of the Committee to attend the Congress.

Stockton-on-Tees and Gillingham Competitions.—The R.I.B.A. has endeavoured to get the conditions amended in the competitions for the Queen Victoria High School at Stockton-on-Tees and the Gillingham Public Baths; but without success. The promoters of the former competition say the conditions were framed by an architect of great experience and to meet special circumstances, and they do not feel at liberty to depart from them. The Gillingham Urban District Council considers that their conditions do not need any revision.

The Edinburgh Architectural Association held its annual general meeting last week, Mr. A. Hunter Crawford, F.R.I.B.A., president, in the chair. The treasurer's report showed that there had been exceptional expenditure, but that up to date there was a small credit balance. Among the office-bearers appointed were the following:—President, A. Hunter Crawford, F.R.I.B.A.; vice-presidents, H. O. Tarbolton, J. Stuart Syme; hon. secretaries, William M. Page, Colin B. Cownie; hon. treasurer, W. Glassford Walker, C.A. In his closing address the president said that the membership, now 358, was the largest attained in the history of the Association.

Obituary.

Mr. William Evans, builder, of Llandudno, died recently at the age of seventy-four.

Mr. G. Stafford, a well-known master-joiner and builder of Chester, died recently at the age of forty-six years.

Mr. H. Wheatley, contractor, of Cranbrook Road, Chiswick, was killed last week while cycling. Mr. Wheatley built a great number of houses in Chiswick and the neighbourhood.

Mr. David Martyn, builder, of St. Dennis, died recently at the age of sixty-four years. He was in partnership with his son, Mr. W. T. Martyn. In the china-clay industry he was an expert in the erection of kilns.

Mr. J. F. Hughes, builder, of Utica, U.S.A., died recently. Mr. Hughes was a native of Llangerniew, Denbighshire, and emigrated to the United States about thirty-two years ago, after living and working in Llandudno, Liverpool and Manchester. By trade he was a builder, and he gained the reputation of being the best and largest builder in Utica. He was for many years the president of the Builders' Exchange, and a prominent member of the Utica Chamber of Commerce.

Builders' Notes.

The Corporation Fever Hospital, Bradford has been supplied by Messrs. E. H. Shorlan & Brother, of Manchester, with more of thei patent Manchester stoves with descendin smoke-flues.

The Junior Institution of Engineers held meeting last Friday, the chairman (Mr Kenneth Gray) presiding, when a paper, whic we shall publish next week, was read b Mr. R. W. Newman, A.M.I.C.E., vice-chai man, on "The Effect of Design on Methods c Construction from a Contractor's point c View." The author sailed on the followin day for South Africa to take up a Colonia Government appointment as engineer on th construction of the Thebus Irrigation Work Cape Colony. Mr. H. Cartwright Reic M.I.C.E., member of the Council of the Institution, will shortly be leaving for Malt as superintending civil engineer in the cor struction of the harbour works.

London Streets.—The conference of representatives of the metropolitan borough cour cils, convened by the Camberwell Boroug Council, makes the following recommendations:—London should be treated as a whol and improvements systematically selecte best calculated to provide relief to the mai thoroughfares, as advocated by a Select Committee of Parliament in 1871 and at onc formulated by the London County Couci in a definite and comprehensive scheme fc all future county improvements, and upo which London should equally contribut upon rateable value. In all thoroughfare in which tramways are or may be constructe a width of not less than 54ft. should be prc vided, and the total cost of widening borr by the London County Council either out c the tramways account or the county rate.

The Builders' Clerks' Benevolent Instit tion held its twenty-fifth annual festiva dinner at the Holborn Restaurant last wee under the chairmanship of Mr. Deputy Greer wood, the president. There was a compan of about four hundred. In proposing th toast of the evening, the president said th institution paid an annual "fee" to thos members who had been unfortunate enoug to fall on evil times; and sent the orphar of deceased members to the schools of oth institutions. Pensioners, men and womei received £30 and £24 respectively per annun and the wise course was taken of sendin the orphans to well-recognized schools. Th institution was founded in 1866, and th income for 1902 was £756. Up to the preser time it had distributed in pensions, &c., sum of over £10,000. The secretary announce a subscription list of £232, which included contribution of £25 from the president.

The Newcastle Masons' Strike. — Th members of the Newcastle and Tyne Distri Building Trade Employers' Association m last week to consider the situation create by the strike of 400 masons employed locall The employers had made certain demand for alterations in the working rules, and ha requested that the stonemasons should agr to the working day being extended by o hour. The men resisted these proposal The employers offered to withdraw the maj part of their demands—including that f the extension of the working day—if tl masons would grant them the extensio of a week after the date of expiratio of the notices in order that they mig obtain the sanction of the Northe Counties Federation, with which they (tl employers) were affiliated. The men d clined to grant any extension, and came o on strike against the employers' proposa The Federation has now been consulted, ar the masters had decided to withdraw the notices of desired alterations.

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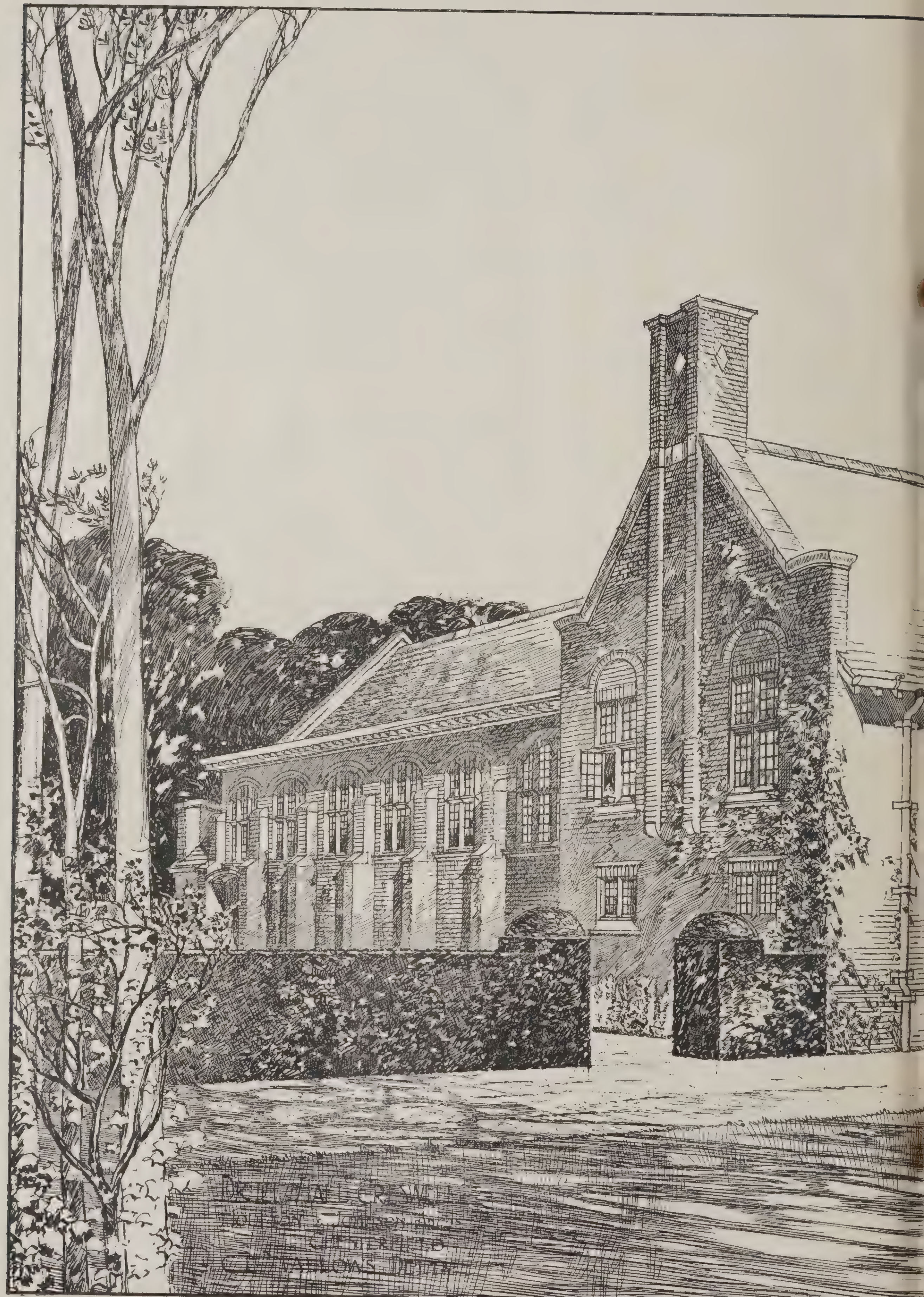
Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, April 29th, 1903.



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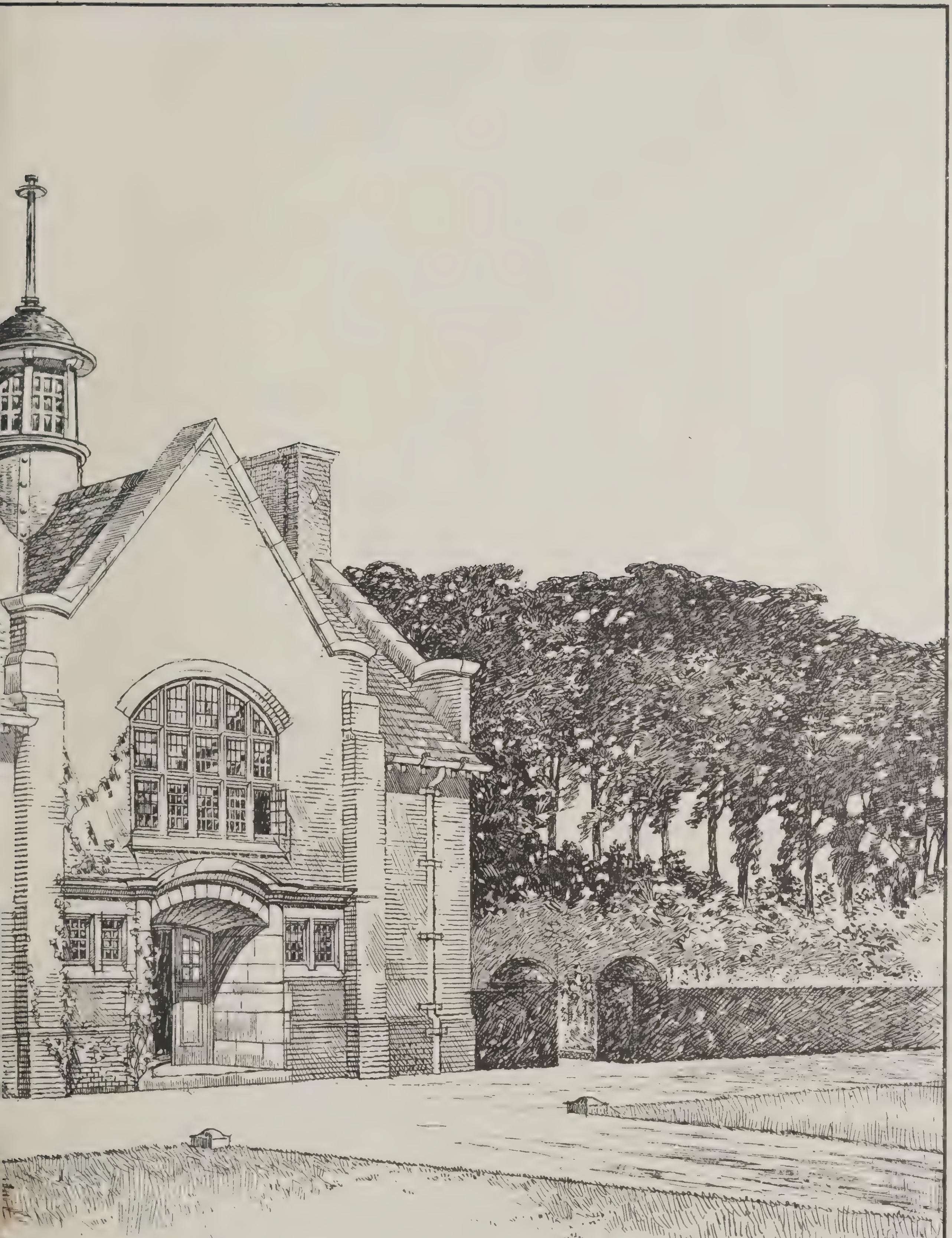

ON AND JOHNSON, ARCHITECTS.

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Supplement to
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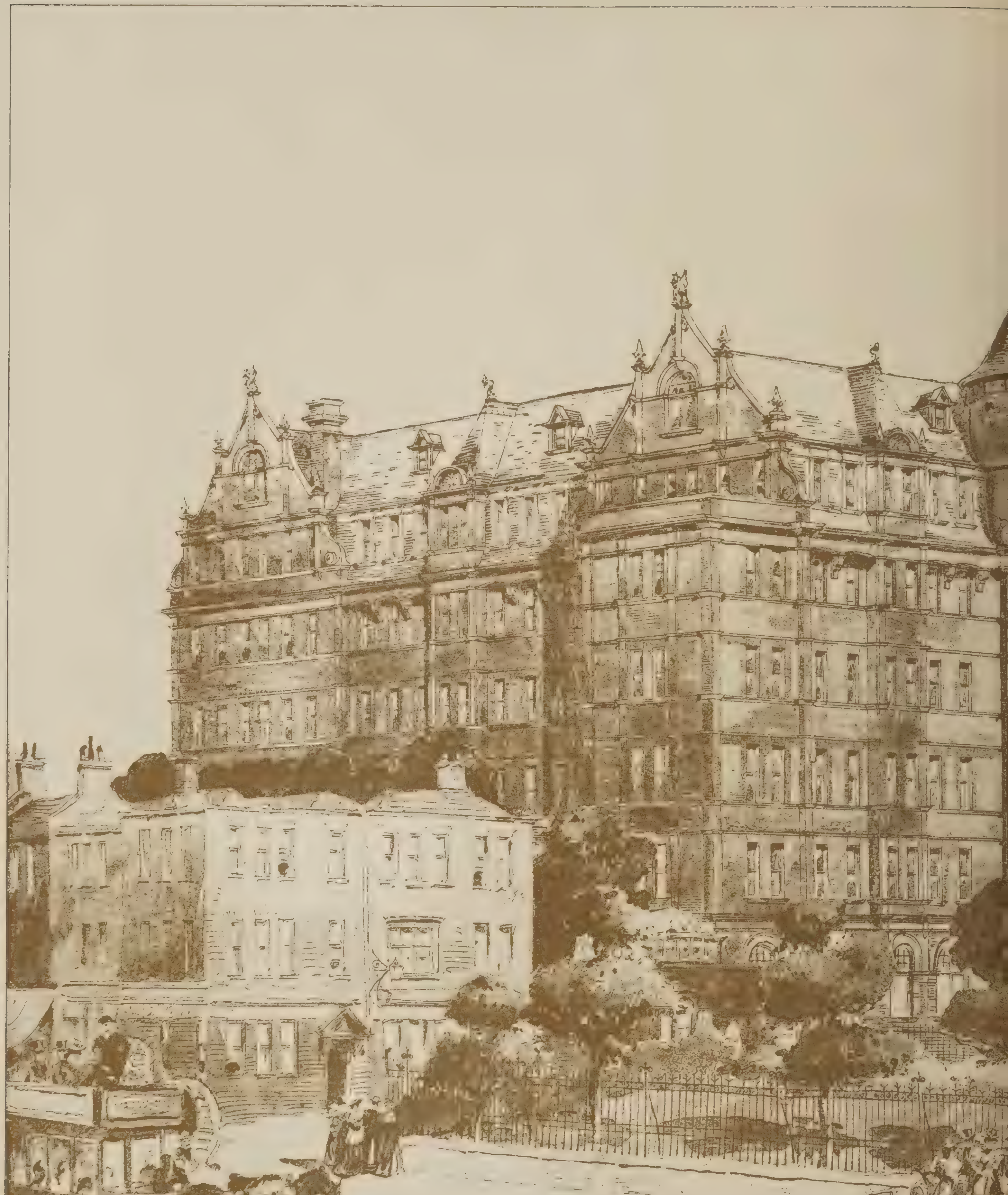
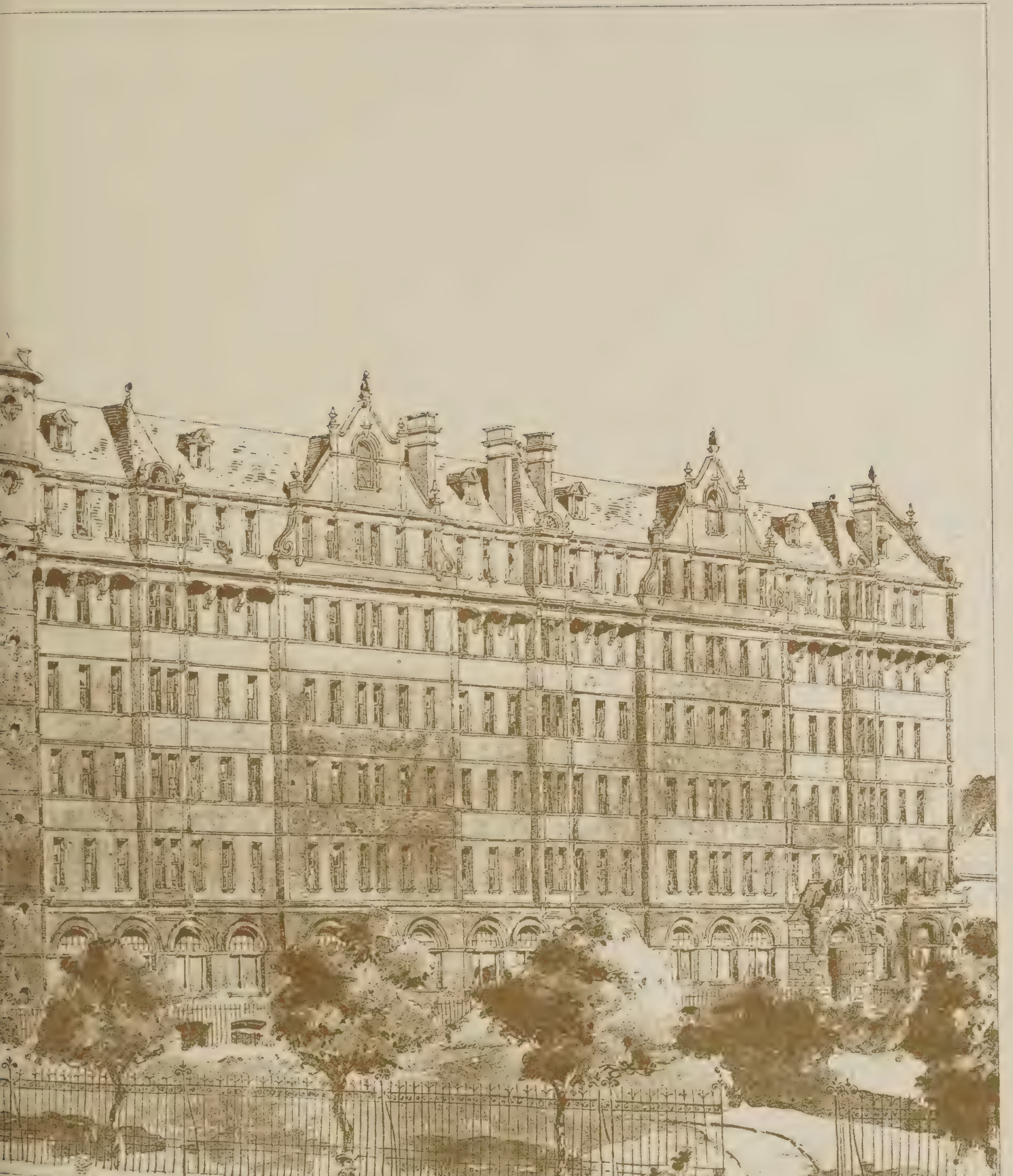


ROWTON HOUSE, NEWINGTON BUTTS, LO



K-PHOTO." H. J. EVERETT & SONS, 58 LUDGATE HILL, E.C.

S.E. HARRY B. MEASURES, F.R.I.B.A., ARCHITECT.

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RCHITECTURE AT THE SCOTCH ACADEMY.

THE collection of architectural drawings in this year's Royal Scottish Academy : Edinburgh is entirely confined to the small :tagon. The centre piece of the apartment a model of the principal group in Sir owand Anderson's competition design for ie National Memorial to Queen Victoria in all Mall, a scheme further illustrated in vo water-colours. The frame of photo- raphs of Mr. Washington Browne's build- gs so well known as the Free Library, edfern's, &c., show a versatility of detail, oth exterior and interior, and a general high vel of excellence that has not been put out countenance by the subsequent work of e architect himself or his rivals. That of r. Lorimer, just elected an Associate, has so a varied selection ; notably, the Church the Good Shepherd and Briglands, in the d Scottish manner that Mr. Lorimer has ecially made his own. Mr. Kinross's frame views of dairy buildings at Manderston cludes a needed key plan. This is quite n unusual subject for such rich treatment, it, though money has been lavished, it has een well directed. The style is late Gothic, ith a suggestion of Roslin Chapel in the one carving. Mr. Flockhart's mansion at osehaugh is a particularly rich example French Renaissance. Three interior photo- aphs of Parkwood, Henley-on-Thames, are so in French Renaissance, though not quite pronounced. There is a fine canopy ick-and-stone chimney, heavy ceiling ists, and the walls apparently hung with ather. Mr. A. N. Paterson's frame is of ree views of Auchendennan on Loch omond. The style is revived Scottish venteenth century, and falls in with the isting fabric. Equally sumptuous is the Billiard-Room" designed by Mr. John A. ampbell, full of interesting and original etail ; while the same architect's "Duncryne ottage" is not inferior.

Though there are so many photographs en of the drawings that form the larger art of the exhibition, the majority delineate tual erections, and it is a pleasure to te, further, that geometric elevations are fered besides the too prevalent perspec- ve. A scale drawing of the "Scots- an" buildings (Messrs. Dunn & Findlay, chitects) shows a dignified design of type that specially distinguishes recent linburgh architecture, a phase of classic at makes much of rustication, and has as favourite feature the corner turret, always nploying sculpture and well-modelled rving. Messrs. Stephen & Pettigrew's well- nown gilded dome is also shown in geo- etric elevation, coloured ; apart from its iking decorative treatment, it is an ex- llent piece of work, especially when account taken of the restriction imposed by earlier ildings. Of Edinburgh street architecture block in Princes Street, by Mr. Hippolyte Blanc, and another in North Frederick reet by Messrs. Dunn & Findlay, are both propriately treated for frontages where ight exceeds breadth ; in each a couple of iels carried through several storeys are ade the most of ; in Mr. Blanc's there is as ell the high-pitched gable of the kind has frequently employed. The Glasgow rish Council Office, by Messrs. Thomson & ndilands, is a red stone building after e French Ecole des Beaux-Arts tradition : mething similar is the same architects' ringburn Hall competition design. hurches this year are unusually few. The skine United Free at Burntisland, by Mr. J. Wilson, is capably if not just excellently ndled, as the author's many examples nerally are ; a favourable point is that in- ead of a starved steeple a bell turret is given moderate dimension, and quite sufficiently rich. The east gable of Brechin Cathedral is the part recently restored ; the design of the old side windows is repeated here in the gable with a new feature, a circular light, over. The corner pinnacles strike one as being just a little fussy in outline. Mr. Honeyman has another exhibit, a "Sketch for a Cathedral" on orthodox enough lines, but rather uninteresting ; the central tower particularly is after a poor model. The altar in alabaster of St. Margaret's Convent, by Mr. Macpherson, has its place in a hexagonal apse of an earlier period than the furnishings, quite a favourite custom nowadays in the use of Gothic that has much to commend it. The Grainger memorial pulpit in Glasgow Cathedral nave (Mr. P. Macgregor Chalmer, architect) looks even better in actuality than here in pen and ink, as, apart from its own worth, it gives interest to the bare nave that is too much of a vestibule to the church proper. A Carnegie Library at Coatbridge (Mr. Alexander Cullen) is a classic building in the large manner characteristic of this architect's work ; it is illustrated by a good wash-drawing. Another library, one of the unsuccessful designs for Maryhill by Mr. Harry R. Taylor, has a façade very well treated. The Boroughmuir School (Mr. J. A. Carfrae architect) is less of the square factory type that unfortunately characterizes not a few Glasgow Board schools, but no plan is given to show by what arrangement the result is obtained. So far as the view goes, there is little in the Headquarters for the Volunteer Brigade of the Royal Scots, by Messrs. Cooper & Taylor, to convey a martial idea. The corner of a drill shed is, indeed, seen in the drawing, but beyond that one might take the administrative block for a modern country mansion. It is seventeenth-century Scottish domestic, quite good architecture, but not very expressive. The house at Peebles by Messrs. Simon & Crawford is much the best example of domestic work shown ; without either affected rusticity or architectural formality, it is a stone building with tiled roof, interesting, good in plan and elevation alike, without resort to oriels or many breaks in the wall-line, and the effects got by good detailing of door and window and chimney head, illustrated by geometric drawings lightly coloured. Two schemes of colour-decoration, a banqueting hall and a Kelvinside billiard-room, by Mr. Ednie, are excellently presented in facile brushwork. Mr. Leiper's sketch design for the decoration of the Glasgow Municipal Banqueting Hall is rather remarkable for an architect as it flagrantly disregards the structure of the apartment ; the main pilasters are cut in two, and the subordinate order shortened by the depth of its capital through the band of dark colour introduced. A rather highly coloured perpective of the Victoria Memorial for Allahabad, by Robert F. Sherar, is of that phase of French Gothic to which Burges gave currency ; it survives only in India, where it appears to have a vogue. A simple but most effective patriotic memorial for Hawick is shown by Mr. Birnie Rhine, sculptor. Besides a model, the Academy has admitted a few enamels. None are perhaps of first merit, but the case of unset pieces by Mr. Phœbe A. Traquair shows some very dainty work refined in sentiment, and the figures well drawn.—(Extracts from the "Glasgow Herald.")

A new Board School at Beccles has been erected by Messrs. Grimwood & Sons, of Ipswich, from plans by Mr. A. Pells, F.S.I.

Shrewsbury Abbey Church Tower is to be restored at an estimated cost of about £2,000. The Abbey was founded by Roger De Montgomery, and in pre-Reformation days was one of the most important religious foundations in England.

Bricks and Mortar.

Aphorism for the Week.

It is not by laying up in the memory the particular details of any of the great works of art that any man becomes a great artist, if he stops without making himself master of the general principles on which these works are conducted.—SIR JOSHUA REYNOLDS.

Our Plates. SOME particulars of Rowton House, Newington Butts, are given on p. 160 of this issue.—The drill hall in the village of Creswell, Derbyshire, is being erected for the Bolsover Colliery Co., Ltd., and is intended to serve the double purpose of a drill hall for boys and as a Sunday school. The accommodation includes a drill hall 66ft. by 35ft., with stage and dressing-rooms at rear, entrance hall 12ft. square, two cloakrooms and w.c.'s, tea-room and armoury on the ground floor, with recreation-room above provided with an open gallery front on to the drill hall ; basement and cellarage are also provided. Sand-faced bricks are being used for the exterior, with Ashover stone dressings, Cornish grey-green slates on the roof, and lead lights to windows. There is a ventilating turret, with clock below having skeleton dials. Inside the walls are plastered and coloured with "Duresco," and have glazed-brick dados. Flooring is of marble. Pitch-pine open-framed roof. Messrs. Houfton & Johnson, of Chesterfield, are the architects.

Flats. MR. DELISSA JOSEPH, F.R.I.B.A., replying to a letter which appeared in the "Times" about the lighting and air-space allowed to flats, says : "The flats to which your correspondent refers, as having living-rooms looking into small areas, were probably built before the London Building Act of 1894 came into force. That Act, for the first time, dealt specifically with flats which had come into vogue since the preceding Amendment Act of the Metropolitan Building Act of 1855 had been passed. The Act of 1894 prevents a living-room from looking into an area, unless the area is at least as long as half its height. It also requires all internal areas to have adequate means for the admission of fresh air at the base of the areas. Small areas are only tolerated when they light minor offices and corridors, and even then they must have provision for fresh air admission at the base. From this it will be seen that the special legislation for which your correspondent calls already exists, and that the evils to which he refers cannot recur under the present Act. I have designed many of the large blocks of flats now familiar to Londoners, and have found the provisions of the Act of 1894, in this regard, eminently practical and adequate." In further reply to the same correspondent, he says : "A minor office is a scullery, bathroom or larder, and does not include a kitchen. A kitchen is a living-room and a bedroom is a living-room. Where the windows of living-rooms are, for example, in the north and south ends only of an internal court, then, although the length of the court must, as already stated by me, be at least as long as half its height ; the act does not define the width unless living-room windows look also into the east and west flanks of the court, in which case the width is also at least as long as half the height. In the concrete case put by your correspondent, 'what is the least dimension that each side of a well must have in buildings 80ft. high,' these dimensions would be, assuming living-rooms looked into the well from the four sides, 40ft. long and 40ft. wide. I think I have now shown that under the Act of 1894 there is no prospect of kitchens or servants' bedrooms looking into inadequate or ill-ventilated areas, and that the provisions of the Act are satisfactory."

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Design for Drinking Fountain.

LLANARMON.—E. J. D. writes: "Please give me design and particulars of a drinking fountain with an arch above it, and the probable cost of same if built with stone."

This is asking too much of us. You should apply to a firm of monumental masons.

Stair-Building.

LONDON, N.W.—H. P. writes: "Kindly name a good book on the setting-out and construction of staircases."

"A Treatise on Stair-Building and Hand-Railing," by W. and A. Mowat (published by George Bell & Sons).

Richardsons's "Architecture."

LONDON, W.—A STUDENT writes: "I have recently come across a work entitled 'A Treatise on the Five Orders of Architecture,' in English and French, by George Richardson, dated 1787. Is it of any value either intrinsically or for study?"

The book is only worth 6s. or 7s. now, and is not much referred to for study.

Roof Carpentry and Bakers' Ovens.

AYRSHIRE.—FOOT RULE writes: "(1) Which is the best book on roof carpentry illustrating in detail all kinds of wood trusses? (2) Can you give me any information on the construction of bakers' ovens?"

(1) "Tredgold's Carpentry" (Crosby Lockwood & Co.), price £1 5s. (2) We know of no book on the subject. We advise you to apply to firms making a speciality of this kind of work.

Space per Person in Hall.

LLANELLY.—ASPIRANT writes: "(1) I have been asked to prepare plans for a small hall to seat 250 persons. What is the amount of space required for each person, and what floor area is requisite? (2) Where can I get a copy of the Model By-laws of the Local Government Board?"

(1) Allow 18in. length of seat for each person and a width of seat of 13in., and a width from back of one row of seats to back of next of 32in. at least. The floor-space, inclusive of passages, &c., for 250 would be about 1,200ft. super. (2) Messrs. Eyre & Spottiswoode, the King's Printers, East Harding Street, London, E.C.

Ascertaining the Proportions of Lime and Sand in Mortar.

STUDENT writes: "What is a simple but practical method of analysing mill-made mortar with a view to ascertaining whether the material contains the proportions of 1 of lime to 3 of sand or grit without earthy matter?"

A method of determining the proportions of lime and sand present in mortar, accurate enough for all purposes, is as follows:—Take a small quantity of the mortar and dry it by heat. Weigh it carefully, then put it in a glass dish and pour on a strong solution of hydrochloric acid, and leave for some time to allow it to dissolve all the lime. Then boil until dry, and pour on again plenty of water. Then pour on to a paper filter (to be bought at any chemist's) previously weighed; dry the filter with the contained residue, and weigh. This weight represents the earthy matter and grit, and the loss of weight found by deducting it from the weight of material before treatment is the amount of lime.

Roof-Truss to carry Top Floor.

HARROGATE.—DOUBTFUL writes in further reference to the reply given on p. 120 of our issue for April 8th. He gives details and figures which are not of general interest, but sufficient can be gained from the reply below.

By actual measurement the ground space occupied is as follows:—

	Cwt. per ft. super.
2½ cwt. sack of flour, 2·625ft. super.	= ·952
„ „ grain, 2·00 „	=1·250
2 cwt. „ coal, 1·58 „	=1·266

therefore 1¼ cwt. per ft. super. is the maximum possible with sacks of grain one tier deep, so that if the floor be safe with 2 cwt. per ft. super, it would permit a few sacks to be placed here and there upon the first tier.

HENRY ADAMS.

Treating Half-Timber Work.

CARLISLE.—CAREL writes: "I am erecting a golf pavilion at a seaside links. It is of half-timber rough-cast, with a brick base and Ruabon tiles on the roof. What is the best treatment for the external timber framing? The site is an exposed one; and I propose to stain the timber a dark oak colour, and give it two coats of boiled oil well rubbed in. I have been recommended to use Stockholm tar. What do you recommend?"

We do not see any advantage in treating the oak with any solution. If good seasoned English oak is used it will acquire a lovely silvery tone with age. As to your suggestions, both are equally efficacious in protecting the surface of the oak from the weather, but Stockholm tar looks ugly.

West Walton Church.

H. J. W. writes: "Kindly give some particulars of West Walton Church."

West Walton Church is dedicated to St. Mary. It appears that some of the family of Repps continued at West Walton from the time of the Conqueror till the year 1750. The church has a curious freestone tower standing about 22yds. south of the structure, which contains five bells. The church consists of a nave, north and south aisles, and a chancel, on the north side of which, a small distance from the pavement, lies a religious person, supposed to have been an abbott, under a tabernacle. The style of the church is Early English, and it is much ornamented by arcades enriched with the ornament of that period.

M.

Staining Oak Work.

WELLINGTON.—OAK writes: "(1) Will permanganate of potash, if used as a stain to darken oak, have any ill effect on the wood? (2) What do you consider the best stain for this work? The oak is used in choir benches in an old church. The benches in the body of the church are deal stained dark, and naturally the new oak is a great contrast. Do you think it advisable to stain the oak at all?"

(1) Permanganate of potash will not injure the structure of the oak, but will make it unsightly. (2) We do not advise the use of any stain, but if it is done at all oak is best darkened by fumigation with ammonia. The oak may look bright and new at first, but it is far better to let it acquire an even colour by age.

Building Construction Examinations.

GLASGOW.—QUERULOUS writes: "(1) In which of your issues were published the answers to the S.K. Building Construction Examinations (Advanced)? (2) Is there any small booklet issued with examination questions for a number of years back? (3) In Rivington's Advanced it says 'the consideration of bending moments is not included in this course.' Is this consideration now included? (4) I have heard it frequently stated that iron roofs are now to be considered in the Honours stage only. Is this so? (5) Do the R.I.B.A. allow the Preliminary Examination to be taken in two years? (6) When is the Kalendar to be issued?"

(1) Answers to the South Kensington Examination in Building Construction (Advanced) for 1901 appeared in our issue for June 19th, 1901, and for 1902 in our issue for May 14th, 1902. (2) We know of no book answering questions set in recent years, but for several years past answers have appeared in "Building World." (3) They are now included in the Advanced Stage. (4) Iron roofs came into the Honours Stage. (5 and 6) Write to the Secretary of the Institute, 9, Conduit Street, W. The syllabuses of the South Kensington examinations are to be found in Part II. of the Directory of the Science and Art Department, published by Messrs. Oliver & Boyd, of Edinburgh, or Messrs. Eyre & Spottiswoode in London.

Roman Vaulting.

TAUNTON.—CYMA writes: "The following question was asked in the Final Examination of the R.I.B.A. held in 1898: 'Draw to ¼in. scale one bay of an arcade not less than 16ft. wide, showing method of vaulting adopted by the Romans.' Kindly give a rough sketch of the above, or name of book that supplies the information."

See the article on "Voute" in Viollet-le-Duc's "Dictionnaire de l'Architecture Française" and that on "Construction" in Planat's "Encyclopedie de l'Architecture." Choisy is the great authority for Roman construction, and prepared numerous and most elaborate drawings which were published as steel engravings; they can be consulted at the large libraries.

Approval of Plans by an Urban Authority.

PEMBROKE.—COTTAGER writes: "When plans of houses are submitted to an urban authority, and they fail to either approve or disapprove them within a month, can they prevent or in any way take proceedings against anyone building according to these plans—(*a*) if plans are in accordance with by-laws; (*b*) if not strictly in accordance with by-laws? If the answers to the foregoing are in the negative, then where by-laws require only a fortnight's notice to be given of the intention to build, would this fortnight be the limit of time in which the authorities could reject, or would it be the month as given by the Public Health Act?"

The urban authority may take proceedings and call upon the building owner to show cause why such building should not comply with the requirements of the local by-laws. If the plans are in accordance with the by-laws, then the building owner apparently has nothing to fear as to the result; but if not, the result would, to a large extent, depend upon the points at issue, as no hard-and-fast rule can be laid down. In the case of *Masters* v. *Pontypool Local Board* it was held that if the local authority has not during the month prescribed by the Public Health Act of 1875, section 158 signified its disapproval of the plans submitted, it cannot afterwards object to the building according to the plan, nor can it under section 158 pull down a building without giving the building owner an opportunity of showing cause why it should not be pulled down. Also in the case of *Clark* v. *Bloomfield* it was there held that if a local authority did not approve or disapprove of the plans within a month, they could not pull down any work done in conformity with such plans, nor proceed for penalties for breach of any by-law. With regard to the further query, it is considered that the period of one month as laid down by the Public Health Act should be taken as providing the local authority a fair and reasonable limit of time to reject or otherwise express their decision with regard to the plans submitted.

T. E. C.

MODERN LONDON BUILDINGS.

(*Continued from* p. 135, *No.* 427.)

A list of public and semi-public buildings in the E.C. district was published in our issue for March 25th, of domestic and religious buildings, colleges and schools in the same district in the issue for April 1st, and of business premises in the same district in the issue for April 15th.

E.C. DISTRICT: BUSINESS PREMISES—*cont.*

BUILDING.	ARCHITECT.	APPROXIMATE COST.	REMARKS.
		£	
1878.			
Cold Storage Wharf Buildings, Cannon Street.	A. D. Dawnay, C E., and E. A. Gruning	—	The buildings cover an area of 27,000 sq. ft., and provide 500,000 cub. ft. of storage space.
1887.			
Sampson Low, Marston & Co's Premises, Fetter Lane, Fleet Street.	W. Leckham Witherington.	—	The premises have an 80ft. frontage and 70ft. depth. The elevation is of Portland stone and white brickwork. The building comprises offices and warehouses.
Six Warehouses on site of St. Paul's School, St. Paul's Churchyard	Delissa Joseph	—	These warehouses form the north wing and façade of the buildings on the site. The fronts are in glazed brickwork and Portland stone, with granite pilasters and bases to ground floor.
1888.			
British Equitable Assurance Co.'s Offices, 12 & 13 Queen Street Place, E.C.	A. S. Gover	—	The frontage is 72ft. and the depth 50ft. The two principal façades are in Portland stone, the ground-floor pilasters being of polished grey granite on a rusticated granite base. The general offices occupy the whole of the ground floor. The board-room on the first floor measures 48ft. by 25ft. 6in.
Offices for Mr. F. Mathieson, 32 Cornhill.	E. B. I'Anson & Son.	—	The lower portion of the façade is in red Aberdeen granite and the upper portion in Portland stone.
London and South-Western Bank, Fenchurch Street.	T. S. Edmeston	—	The Fenchurch Street frontage is 50ft. in length and that in Gracechurch Street 42ft., part of which is built as offices and shops. Portland stone, with granite up to window sills, were used for the fronts.
North China Insurance Co., 78 Cornhill.	William Kidner	—	The lower portion of the front is of grey Aberdeen granite, the superstructure being of Portland stone and red gauged brickwork. The carving was executed by Mr. Gilbert Seale.
Premises, 64 Finsbury Pavement.	W. H. Woodroffe	3,300	The front is of Portland stone and red granite, with projecting porch and bay window.
Premises, 145 Cannon Street.	Delissa Joseph	—	The elevation is in Portland stone, carved by Mr. Gilbert Seale.
Premises, 1 Amen Corner and 13 Warwick Lane.	George Pearson	—	The fronts are of red brick and Portland stone.
British and Foreign Marine Insurance Co.'s Offices, 31 Cornhill.	E. B. I'Anson & Son.	—	The ground floor is in polished red Aberdeen granite, whilst the upper portion is in Portland stone
1889.			
Commercial Bank of Scotland, new premises at corner of Lombard Street and Birchin Lane.	J. Macvicar Anderson.	—	The building is Classical in style. The walls from the level of the street up to and including the main cornice are built of brickwork faced with granite. The fronts on the ground and first floors, with the columns, are of light grey Aberdeen granite. Some of the columns are monoliths, weighing from 2 to 4½ tons each. The jambs of the entrance doorway each weigh 5 tons and the lintel 7 tons, the total weight of granite used in the building being 314 tons. The public office is lined with marble and has a marble mosaic floor.
Premises, corner of Holywell Lane and High Street, Shoreditch.	Drury & Lovejoy	—	The buildings comprise commodious basements and shop on ground floor, with showrooms on first and second floors. Above the second floor they are carried out in red brick with light terra-cotta dressings.
Premises, 137 Cheapside and 45 & 46 Gutter Lane.	Walter Greaves	—	The building contains in addition to the business premises a handsome restaurant on the top floor.
1890.			
Banking Premises, 43-47 Threadneedle Street and 2-4 Crown Court.	T. H. Smith	20,000	The front of the buildings up to the sill of the first-floor windows is in polished grey Aberdeen granite, the upper parts being in Portland stone.
Chesterfield House, 98 Great Tower Street.	Delissa Joseph	—	The basement of this building forms a restaurant, while the ground floor consists of shops; the first, second, third and fourth floors form commercial offices, and the fifth housekeeper's apartments. Constructional ironwork has been largely used throughout the building, and also wood-block paving. The ground-floor storey has been executed in grey and red granite, and the whole of the upper portions in Portland and Beer stones.
Garden House, Throgmorton Avenue.	Davis & Emanuel	—	This building occupies a frontage of 142ft. next Throgmorton Avenue, and a return frontage of 30ft. to Austin Friars. The entire fronts are faced with Portland stone. The sub-basement is built for strong-room purposes, and the floors above used as offices. A passenger-lift traverses the entire building. The floors generally are of fireproof construction.
Premises, 10 Fore Street	Delissa Joseph	—	Constructional ironwork is used extensively throughout. The elevation is of Portland stone, the ground-floor bases being of grey granite.
Premises for Messrs. Hudson Brothers, Ludgate Hill.	J. W. & R. F. Beaumont.	—	The lower portion of the building is of grey and red Aberdeen granite, and the upper portion is faced with Bracknell red bricks and Mansfield stone dressings. The first and second floors are let as offices, and the third-floor is occupied by Messrs. Hudson Brothers.
Stores for Messrs. Spiers & Pond, Water Lane, Queen Victoria Street.	H. A. Matear, Architect, and Sidney Hargreaves, Civil Engineer.	—	The buildings contain basement and sub-basement floors, with three floors above. The whole of the buildings both inside and out have been faced with glazed bricks. The exterior of the buildings is of Aberdeen granite up to 6ft. high and glazed bricks with coloured bands for the remainder. The cornices, sills, &c., are of Mansfield stone.
1891.			
Factory for Messrs. I & R. Morley, Golden Lane.	H. J. Treadwell	—	The building consists of eight floors including basement and sub-basement. The upper portions form sleeping accommodation for 120 porters, together with library and smoking room, all approached by a separate staircase from the business portion. The materials are brown Portland stone and red Bracknell bricks. The basement storeys are of granite and the ground storey entirely of stone.
Ludgate Hill Branch of the City and Midland Bank.	T. E. Collcutt	—	The ground-floor storey is in Aberdeen grey granite and the upper portion in terra-cotta. The carving and modelling is by Mr. Walter Smith.
Tower Buildings, Trinity Square.	T. R. Richards	—	These premises are used for business purposes, having five floors including the basement, and are built of red brick.
Warehouse for Messrs. Phillips & Co., corner of Mitre Street and King Street, Aldgate.	M. E. Collins	—	The materials used in the construction of these premises are red brick and Portland stone. The roof is an asphalted flat.
Eleven warehouses, Bradford Avenue, Red Cross Street.	C. J. C. Pawley		
1892.			
Bank premises for Messrs. Prescott, Dimsdale, Cave Tugwell & Co., Ltd., 50 Cornhill.	Henry Cowell Boyes.	25,000	The lower portion of the façade consists of a bold Aberdeen grey granite arcade, the upper part being of red brick with Portland stone dressings. Nearly the whole of the ground floor is occupied by the telling room, which is faced with English alabaster, with Spanish mahogany dado and cornice. On the first floor are the board-rooms, the secretary's offices, luncheon- and waiting-rooms. The upper floors contain the apartments of the residential staff. The basement and sub-basement contain the strong-rooms—nine in number. The roof is an asphalted flat.
Goods receiving office for Messrs. Pickford & Co., 34 Queen Street, Cheapside.	R. J. Worley		
Premises 18 to 23 Cheapside.	T. H. Smith	—	These premises have a frontage of 60ft. to Cheapside and a depth of 200ft. They comprise four large warehouses, each having basement and four floors over, with two additional floors to front block. The front is in Portland stone and the carving is by Mr. Gilbert Seale.
Shop front for the directors of Sir John Bennett, Ltd., 65 Cheapside	A. Burnell Burnell	—	The front elevation of this building has been renewed, the old frontage being reduced by half.
"Token House" for Messrs. Mathieson & Sons, printers, 16-18 Copthall Avenue.	J. Barnes Williams	—	The lower portion of the front is built of Cornish granite and the upper portion of Portland whitbed stone.

E.C. DISTRICT: BUSINESS PREMISES—*cont.*

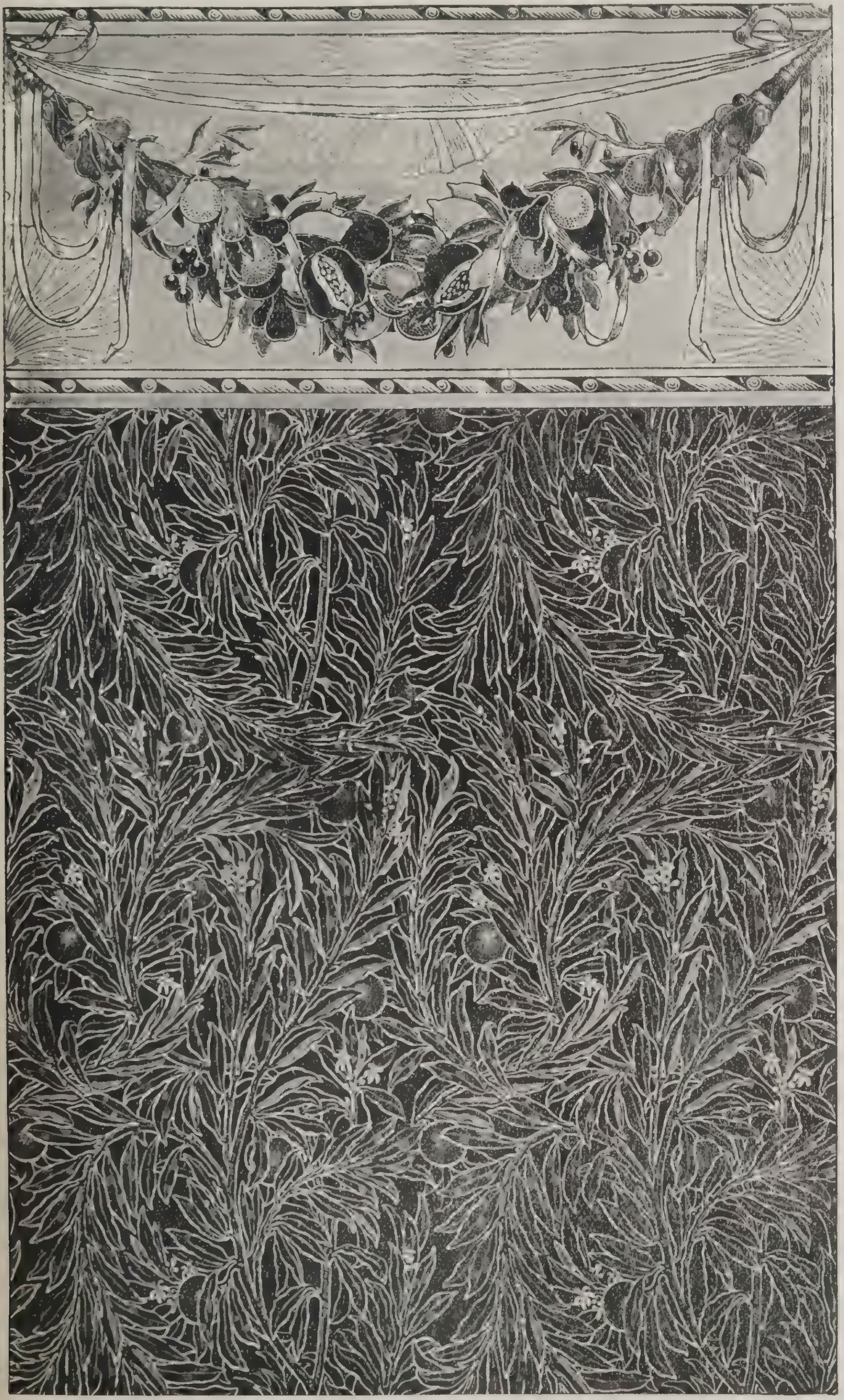
Building.	Architect.	Approximate Cost.	Remarks.
1893.			
Premises for Messrs. William Dawson & Sons, Ltd, Cannon House, Bream's Buildings, Fetter Lane.	W. Seckham Witherington.	—	The third storey, which has a fireproof floor, is occupied by the Birkbeck Institution which adjoins, and is specially arranged as an art studio and life classroom. The stone used in the elevation is Portland, and the bricks are red Pluckley. The carving is by Mr. Gilbert Seale.
Banking and office premises, 6 Old Jewry.	Delissa Joseph		The ground floor portion of the elevation is in grey granite and the remainder in Portland stone. The interior and exterior joinery throughout is executed in mahogany.
Finsbury Circus Buildings, 18 Eldon Street.	Delissa Joseph	—	The ground floor in Eldon Street is occupied by shops. The building contains, in some parts, seven storeys consisting of offices, comprising 116 rooms. The elevation is in Portland stone, executed by Mr. F. J. Barnes.
Office premises, 18 Bishopsgate Street Within.	W. E & F. Brown	—	This building is designed to form suites of offices. The ground floor is in polished Cornish granite, and the rest of the front is in terra-cotta, modelled by Mr. R. A Ledward.
St. Dunstan's House, St Dunstan's Hill.	J. T. Wimperis & Arber		This building forms a large block of City offices. The portion facing Lower Thames Street is designed as a restaurant and hotel.
St. Olave's Chambers, Old Jewry.	Delissa Joseph	—	This block of offices occupies nearly the whole of the site formerly occupied by St. Olave's Church. The elevation is in Portland and Bath stones.
Warehouse for Messrs. Pratt & Sons, Peter's Lane, Smithfield.	Lewis Solomon	3,500	This building has a 56ft. frontage.
Warehouses 18, 19, 20 & 21 Warwick Square.	Delissa Joseph	—	This range of warehouses is constructed of red brickwork and Portland stone, the ground floor having shop fronts facing the street.
1894.			
The Metropolitan Life Assurance Society's Building, 13 Moorgate Street.	Aston Webb & E. Ingress Bell.	— —	On the ground floor is the main office, the actuary and assistant-actuary's rooms and the committee-room. On the first floor are a board-room, doctor's- and dressing-room, waiting-room and directors' luncheon-room. The walls of the ground floor and board-room are panelled with Spanish mahogany. Portland stone is used for the fronts with polished Cornish granite for the plinth. The sculpture is by Mr. W. S. Frith.
Peninsular and Oriental Steam Navigation Co.'s offices, 122 Leadenhall St (additional building).	T. E. Collcutt	—	The front is faced with Portland stone, relieved with Corsehill stone bands and columns. The sculpture was executed by Mr. Henry Pegram. The lower panels contain water colour drawings in bronze frames, by Mr. Frank Murray.
Premises 141 & 142 Fenchurch Street.	Ebenezer Gregg	7,500	This building has a ground-floor front of Portland stone and the upper storeys of red brick and buff terra-cotta. The front portion of the ground floor and basement form shop premises, whilst the rear and all the floors above are designed as offices.
"West India House," 96 Leadenhall Street.	Delissa Joseph	24,000	This building, which covers an area of 7,000ft., contains over 100 rooms and comprises seven storeys. The elevation is carried out in Portland stone and grey granite.
Temple House, premises for Messrs. Horace Marshall & Son, Temple Avenue.	Frederick Boreham	—	The style chosen is Italian and the materials are red brick and Portland stone. The frontages are 100ft. to Temple Avenue and 80ft. to Tallis Street. The basement and ground floor are devoted to the general requirements of the business, the clerks' offices and stock-rooms being on the upper floors. On each of these floors and fronting Temple Avenue are suites of offices for the use of editors connected with the publications of the firm, and also offices for the principals.
Bishopsgate House, Bishopsgate Street.	T. H. Smith		
Dominion House, 110 Fenchurch Street.	Delissa Joseph	18,000	This range of merchants' offices covers an area of 6,400ft., the frontage to Fenchurch Street being 46ft., carried out in Portland and Westwood stones. The basement is arranged as fireproof wine cellars.
Ocean Accident and Guarantee Corporation, Ltd., Offices, Moorgate Court.	H. Huntly-Gordon	—	The building is built of red bricks and grey terra-cotta. It contains over 100 offices and has two basements. The construction is fireproof, being of concrete and steel..
Offices for H. Huntly-Gordon, 123 Cannon Street.	H. Huntly-Gordon	—	The front is built in red rubber brickwork and grey terra-cotta.
Offices for Messrs. Edward Lloyd. Ltd, 12 Salisbury Square.	H. L. Florence	—	The elevation is of red bricks, with dressings and bands of red Mansfield stone, bronze tablets being placed over the ground-floor windows. The floors are fireproof and the internal woodwork is oak.
1896.			
Bank of Scotland, Prince's Street	William W. Gwyther.	—	The exterior of the building, which is designed on Italian lines, freely treated, is of Portland stone, the portion of the front up to the bank windows being rusticated and rock-faced. The entrance arch and vestibule are in polished Norwegian porphyry. In the spandrels are figures executed by Mr. E. Roscoe Mullins. On the ground floor is the banking hall, a chamber 60ft. by 50ft. by 20ft. high. The ceiling is divided by moulded and enriched cornices and the walls are lined with green tiles and a dado of Numidian marble. The manager's- and committee-rooms are on this floor, the upper floors containing separate offices.
Birkbeck Bank, Southampton Buildings (completed 1902).	T. E. Knightley	—	A spacious entrance at the angle of the building gives access to the large circular banking-hall, which is 75ft. in diameter and is surmounted by a dome, grouped round which are suites of offices. The brickwork is in London stocks and Fletton bricks in cement. The facings in the open areas are of white-glazed bricks, and the arches and sills of all openings are of buff terra cotta; at other places where bricks are employed on the face they are of white gault. The construction throughout is fireproof. The style adopted was Italian Renaissance.
Commercial Union Assurance Company's Offices, Cornhill and Change Alley.	J. Macvicar Anderson	—	The building contains nine floors in the Cornhill block and seven in the Change Alley block. There are two basements in white-glazed brickwork, occupied by strong-rooms, engine-rooms, lavatories, &c. On the ground floor of the Cornhill block are the home, fire, marine and the fire-accountants' departments, and the managers' and underwriters' rooms. On the first floor are the Life Office, with actuary's and doctor's rooms, the adjuster's and the marine accountant's offices. The second floor is occupied by the board-room, 42ft. by 20ft., the directors' luncheon-room, committee- and waiting-rooms and the secretarial department. On the third floor are the county fire and the fire guarantee departments. On the fourth floor the foreign fire office occupies a room 85ft. by 22ft., with plan-room and typists'-room. On the fifth floor are the clerks' luncheon-room, kitchen and offices attached, housekeeper's-room and servants' hall, &c.; and the sixth floor is devoted to bedrooms for servants. The Cornhill front is executed in Portland stone, and the fronts in Change Alley are in polished granite and white-glazed bricks. The building is fireproof throughout.
24 and 25 King William Street.	Gerald C. Horsley	—	This building contains five floors of offices with basement, and housekeeper's rooms in the roof. The materials used were red brick and stone with red-tiled roof.
Temperance Permanent Building Society's Offices, 4 Ludgate Hill.	Rowland Plumbe	—	The building comprises a basement and five floors. Upon the ground are the public office, two private offices, &c. The basement contains a large office in front, and in the rear a series of strong-rooms, a boiler room and lavatory. The board-room is on the first floor. The front elevation presents a bold design in the German Renaissance style, the materials used being Portland stone and red Dumfries stone.
Shop Premises for Sir T. J. Lipton, City Road.	Messrs. King	—	The premises are built of white stone and red brick.
Forty warehouses on site of Old Farringdon Market.	P. B. Tubbs	—	The buildings are faced with Portland stone
1897.			
Bush Lane House, Bush Lane, Cannon Street.	Delissa Joseph	18,000	This block of professional and commercial offices occupies a ground area of 6,000ft. The building has a frontage of 115ft., and the elevation is in red brickwork, with Portland stone cornices, caps, bases and sills. The large entrance feature is also of Portland stone. The building comprises lower ground and upper ground floors, with four floors above, and contains ninety-six rooms on the various floors, which are served by a stone staircase and a passenger lift. The construction is entirely fireproof, and the lighting throughout by electricity.
National Press Agency, 6 Carmelite Street.	Edwin T. Hall	—	This building is constructed of brickwork in cement and faced with red bricks, all the dressings being of brown terra-cotta. The building is of fire-resisting construction throughout.
Phillips & Tribe's Premises, 4 Hosier Lane.	Thomas Wallis	3,370	
Spence & Co.'s Premises, 76, 77 and 78 St. Paul's Churchyard.	Banister Fletcher & Sons.	15,000	The building consists of a basement, ground floor and four upper floors. The front, which is Elizabethan in style, is faced with Portland stone, and the ground floor contains four bay shop-windows. The basement contains packing and order rooms. The ground and first floors contain showrooms. The counting-house and offices are on the second floor, while the third floor contains dining-rooms and a serving-room. On the fourth floor are bedrooms, housekeeper's apartments, kitchen, bathroom, lavatories, &c. The floors are of steel and concrete construction and the roofs are covered with green slates.
1898.			
Barclay & Co.'s Bank (on former site of Messrs. Goslings' Bank), 19 Fleet Street.	Arthur Blomfield & Sons	—	The banking chamber occupies the full width of the site (except for an entrance and staircase for access to the upper floors), the rear portion of the site being occupied by the partners' rooms. The first floor contains a large suite of offices, while the two upper floors are occupied by the bank. The front is entirely of Portland stone.
London Joint Stock Bank, 113 Wood Street.	Davis & Emanuel	—	The site of the building occupies about 3,600ft. super. The bank occupies about two-thirds of the ground floor and about half the basement for its own purposes. The remainder of the building is designed to form offices. The front to Wood Street is a free treatment of Italian Renaissance, in Portland stone, with Swedish red granite dressings to the entrance doorway of the bank.

(To be continued.)

WALLPAPER DESIGN.

WE may regard modern wallpaper design as most satisfactory, for the dead formalities of mid-Victorian art have long since been replaced by living motives treated with great breadth of effect and admirable colour. Many of those who were initiative in this creation of true wallpaper design—for it must not be forgotten that wallpaper is essentially a modern product—are now dead, but among living designers Mr. Walter Crane may fittingly be given a premier place. We may not admire his oil paintings, but as a designer he is paramount. The "Orange Tree" paper with "Fruit" frieze, specially designed for Messrs. Jeffrey & Co., the well-known wallpaper manufacturers, is a worthy example of Mr. Crane's work: the reproduction below shows the design well, but of course lacks the colour which makes it so charming, as one might have seen at the Arts and Crafts exhibition or at Messrs. Jeffrey's new showrooms at 31, Mortimer Street, Regent Street, W. The firm has introduced several new designs this year, such as the "Umballa," the "Salute," the "Josephine," the "Antoinette" (embossed in low relief), the "Bellagio," the "Manse," the "Stamboul" and the "Crouch."

Another of Messrs. Jeffrey's specialities is the "Stamford" decoration, which consists of a plain frieze, a filling, and pilasters which may be put just where they are needed to suit any pictures. The "Loanda" decoration is another of the firm's specialities, being a frieze printed on the filling. These papers may be had in the most beautiful colours—the filling for the "Stamford" decoration especially.



THE "ORANGE TREE" PAPER AND "FRUIT" FRIEZE. BY WALTER CRANE.

Law Cases.

Two Workmen's Compensation Cases.—The two cases of *Elvin* v. *Woodward & Co.* and *Atkinson* v. *Lumb* were heard in the Court of Appeal last week. In the former case the applicant for compensation was a painter in the employment of Woodward & Co., who had contracted to repair and paint No. 46, Finsbury Square, E.C., which exceeded 30ft. in height. The applicant was painting a wall, and was standing upon a pair of ordinary painter's steps, 8ft. high, with a board on the top. The steps slipped and Elvin was injured. At the time of the accident the main scaffolding which had been used in repairing the house had been taken down. The county-court judge was of opinion that the steps afforded no evidence that the house was being repaired by means of a scaffolding, and an award was given for the respondents. The applicant appealed.—The Court allowed the appeal.—The Master of the Rolls said that at one time he would have held without any hesitation that such steps as these were not, and could not be, a "scaffolding" within the meaning of section 7, sub-section 1, of the Workmen's Compensation Act, 1897. The House of Lords, however, had in *Hoddinott* v. *Newton, Chambers & Co.* held that scaffolding might be external or internal, and might include an internal staging arranged with planks and trestles and without poles. It was exceedingly difficult to find any principle of law to apply in ascertaining what was a scaffolding. In *Marshall* v. *Rudeforth* the Court of Appeal had held that it was impossible to say as a matter of law that a ladder placed against a house and used for repairing the house must be a scaffolding. On the other hand, the Court held in *Veazey* v. *Chattle* that a crawling-board used for the repair of the roof of a building might be a scaffolding. The question in the present case was whether a pair of ordinary painter's steps could be a scaffolding within the meaning of the Act. He based his judgment on this, that these steps might be a scaffolding. He could not draw any distinction in point of law between a staging consisting of planks placed across trestles or footstools and ordinary painter's steps which carried their own support with a top wide enough to form a platform for a man to stand upon at work. He could not say as a matter of law that such an arrangement could not be a scaffolding. That being so, there was evidence upon which the county-court judge might find that the steps were a scaffolding, and therefore the appeal must be allowed and an award made in favour of the applicant for £1 a week from fourteen days after the accident.—Lord Justice Stirling felt bound to come to the conclusion that the view taken by the county-court judge was correct.—Lord Justice Mathew agreed with the judgment delivered by the Master of the Rolls.—The respondents will appeal to the House of Lords.—In the second case of *Atkinson* v. *Lumb* the workman injured was in the employment of a contractor who was constructing a reservoir and laying down pipes for the supply of water to a town. It was admitted that the construction involved the use of machinery driven by steam power, and that therefore it came within "engineering work" in section 7, sub-section 2, of the Act of 1897. The reservoir was about two miles from Todmorden. The accident happened about 500yds. from the reservoir in the course of laying some pipes, and the question was whether the applicant was employed "on or in or about engineering work." The county-court judge found that the place where the accident happened was part of the area of the engineering work.—The Master of the Rolls supported that finding, and the Lord Justices were of the same opinion.—Appeal dismissed.

Complete List of Contracts Open.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED
		BUILDING:		
April	30	Abergavenny—Pair of Cottages	R. Lewis	B. J. Francis, Architect, Abergavenny.
„	30	Bowerham—Hotel	W. Mitchell	Harrison, Hall & Moore, Architects, Church Street, Lancaster.
„	30	Buckie, Scotland—Corn Mill	—	A. Gray, 3 Cluny Square, Buckie.
„	30	Carno. Wales—Chapel	—	R. Swancott, Cae-du Cottage, Carno.
„	30	Fochriw, Wales—Rebuilding Chapel	—	James & Morgan, Architects, Charles Street Chambers, Cardiff.
„	30	Huddersfield—Foundry, &c...	—	B. Stocks, Architect, St. Peters Street Huddersfield.
„	30	Lochboisdale, South Uist, Scotland - Cottage	—	D. MacGregor, Solicitor, Oban.
„	30	Wanlip, Leicester—Church Restoration	—	C. H. Fowler, Architect, The College, Durham
„	30	Folkestone Offices, Stands, &c	East Kent Agricultural Society	P. M. Collard, Secretary, Little Barton, Canterbury.
„	30	Kirkby-in-Furness—Church Restoration	Executive Committee	J. Standen-Adkins, 3 Maze Road, Kew.
„	30	Cleator Moor—Alteration, &c, of Classroom	St. Patrick's School	R. Robinson, Public Offices, Cleator Moor.
„	30	Aberdeen—Alterations. &c., to Steadings	—	W. Stewart, Builder, Inverarie.
„	30	North Berwick—Gasworks	Town Council	A. D Wallace, Town Clerk, North Berwick.
„	30	Leicester—Church Restoration	—	G. R. Boreham, 24 John Street, Sunderland.
„	30	Camborne—Business Premises	S. J. Banbury	E. Crispin, Trelawny Road, Camborne
May	1	Hull—Foundations for Baths	Corporation	A. E. White, City Engineer, Town Hall Hull.
„	1	Exminster Devon—Asylum Buildings	—	E. H. Harbottle County Chambers, Exeter
„	1	Sunderland—Electrical Sub-station, &c.	Corporation	J. F C. Snell. Borough Electrical Engineer, Town Hall, Sunderland.
„	1	St. Mary Bourne, Hants—Extension of Cloakrooms	School Board	S Clarke, Clerk, Whitchurch, Hants.
„	1	Atcham, Shrewsbury—Nurses' Home	Guardians	A. B. Deakin, 12A Pride Hill, Shrewsbury.
„	1	Belfast—Alterations. &c., to Premises	Domestic Committee Mission	Blackwood & Jury, 41 Donegall Place, Belfast.
„	1	Cairo—House and Stables	—	Director of Stores, Coast Grd. Administratn., Arsenal, Alexandria.
„	1	Chester—Escape Staircases, &c.	Guardians	J. H. Davis & Sons, 14 Newgate Street, Chester.
„	1	Leeds—Stone Wall	—	Town Clerk, Lower Wortley Recreation Ground
„	1	Sunderland—Coastguard Station	Admiralty	Director of Works Dept., 21 Northumberland Avenue, W.C.
„	1	Barnstaple—Choir Vestry	—	C. W. Parkin, Bridge Chambers. Barnstaple.
„	2	Wellfield—Alterations to Premises	—	J. W. Cameron & Co., Ltd., Lion Brewery, West Hartlepool.
„	2	Huntley, Scotland—Houses. Stable, Sheds, &c...	—	Factor's Office, Huntley.
„	2	Penygroes. Wales—Schoolroom, Renovating Chapel, &c.	—	O. E Jones, Frondirion. Nebo, Penygroes. R.S.O.
„	2	Leek—Electric Lighting Station	Urban District Council	J Taylor, Architect, Leek.
„	4	Halifax—Alteration to School	School Board	W. H. Osler, 23 Union Street. Halifax.
„	4	Grimsby—Shelters. Bandstand, &c.	—	H. G. Whyatt, Borough Engineer, Town Hall Square, Grimsby.
„	4	Luton—Renovating Chapel	—	J. R. Brown & Son, Architects, Luton.
„	4	Manchester—Staircase &c.	Town Hall Committee	City Architect, Town Hall. Manchester.
„	4	Preston—Skew Masonry and Brick Bridge	Lancashire County Council	W. C. Hall, County Bridgemaster, Preston.
„	4	Southampton Superstructure of Electric Light Station	Corporation	J. A. Crowther, Borough Engineer. Municipal Offices, Southampton.
„	4	Selly Oak, Birmingham—Walls and Outbuildings. &c.	King's Norton Guardians	C. Whitwell & Son 23 Temple Row. Birmingham.
„	5	Aberdeen—Offices. Pump House. &c.	Harbour Commissioners	R. G. Nicol, Harbour Engineer, Aberdeen.
„	5	Winsford—Alterations to School	Over School Board	J. H. Cooke, Clerk, Russell Street. Winsford.
„	6	Brendon—Pair of Cottages	G. Sanders	Smyth-Richards & Fox, Barnstaple.
„	6	Armagh—Alterations to Premises	Co-operative Society, Ltd.	H. C. Parkinson, Architect, Armagh.
„	6	Huddersfield—Reseating Chapel	—	J. Berry, 3 Market Place, Huddersfield.
„	6	South Kirkly, near Wakefield—Schools and House	School Board	W. E. Richardson, Architect, Rothwell, near Leeds.
„	6	Southsea—Business Premises	Portsea Mutual Co-op.Soc.. Ltd.	G. E. Smith. 145 Victoria Road North, Southsea.
„	6	Ton-Pentre, Rhondda Valley—Residence	D. Thomas	W. D. Morgan. Architect Victoria Chambers, Pentre.
„	7	Bethesda, Wales—Lavatories. &c...	—	D. G Davies, Clerk to the Governors. Bank Chambers, Bethesda.
„	7	Bishop Auckland—Twenty Cottages	Industrial Co-operative. Flour and Provision Soc., Ltd.	F. H. Livesay, Architect and Surveyor, Bishop Auckland.
„	7	Hengoed, Wales—Ten Houses	No. 2 Hengoed Building Club	P. V. Jones, Architect and Surveyor, Hengoed.
„	7	Southampton—Office	Corporation	W. Matthews, Engineer, Municipal Offices, Southampton.
„	7	Wheatley Hill, Durham—Chapel	—	Rev. W. J. Pearce, Wesley Villas, Thornley.
„	8	Cattal, Yorks—Inebriates' Home	Yorkshire Inebriates' Act Joint Committee.	J. V. Edwards, Architect, County Hall, Wakefield.
„	8	Cork—Library	County Borough Council	H. A. Cutler, City Engineer, Cork.
„	8	Meelich, Limerick—Alterations, &c., to Church	—	B. E. F. Sheehy, 57 George Street, Limerick.
„	9	Londonderry—Cottages	Rural District Council No. 2	J. J. S. Barnhill, 1A Strand, Londonderry.
„	9	Melrose, Scotland—Infectious Diseases Hospital, &c...	Joint Hospital Committee	G. Monteath, Engineer, Post Office Buildings, Newton St, Boswells.
„	9	York—Engine and Boiler Houses, &c.	Corporation	A. Creer, City Engineer, Guildhall, York.
„	9	Bridlington—Engine-Rooms Boiler House, Offices, &c.	Corporation	E. R. Matthews, Borough Surveyor, Town Hall, Bridlington.
„	9	Egremont—Fire Bricks, Retorts, &c.	Wallasey U.D.C.	Manager, Gas and Waterworks, Great Float, Birkenhead.
„	9	Bury. Lancs—Bridge Improvement Works	Corporation and County Council	County Bridgemaster, Preston.
„	11	Deptford—Municipal Buildings	Borough Council	W. T. Farthing & Son, 46 Strand, W.C.
„	12	Camberwell, S.E.—Public Baths and Washhouses, Underground Convenience.	Borough Council	C. W. Tagg, Clerk, Town Hall, Camberwell, S.E.
„	12	Frodingham—Twenty-nine Cottages	British Steel Smelters Assn.	R. W. Greaves, Imperial Buildings, 20 Cross Street, Manchester.
„	12	Bristol—Stables	Great Western Railway Co.	Engineer. Bristol Station.
„	13	Fanad Head, co. Donegal. Ireland—Coastguard Station	—	Office of Public Works, Dublin.
„	14	Birmingham—Lodges, Stables, &c.	Corporation	J. Mansergh & Sons, 5 Victoria Street, Westminster
„	15	Truro—Three Houses	Palmer & Cundy	S. Hill, Architect, Redruth.
„	18	Newcastle upon-Tyne—Workmen's Dwellings	Town Improvement Committee	Liddle & Browne. Prudential Bldgs. Mosley St.,Newcastle-on-Tyne.
„	19	Portsmouth—Technical Institute and Free Library	Corporation	G. E. Smith, 45 Victoria Road North, Southsea.
		ENGINEERING		
April	30	Old Trafford, Manchester—Electric Wiring, &c.	Stretford Urban District Council	C. H. Wordingham, 19 Brazenose Street, Manchester.
„	30	Radcliffe, Lancs—Travelling Crane	Urban District Council	J. Sharples, Clerk, Council Offices, Radcliffe.
„	30	Antrim. Ireland—Weighbridge	Guardians	J Clark, Clerk, Union Office, Antrim.
„	30	Christiania—Cranes	—	Head Engineer, Tangerand and Aal Railway, Vossevangen.
„	30	London—Electrical Plant	Hackney Borough Council	R. Hammond, 64 Victoria Street, Westminster, S.W.
„	30	Wimbledon—Sludge Presses, &c.	Urban District Council	C. H. Cooper, Engineer, Council Offices The Broadway, Wimbledon.
May	1	Kettering—Electrical Plant	Urban District Council	J. Bond, Clerk, Council Offices, Kettering.
„	1	Abercarn, Mon—Gasworks Extensions	Gas Committee	T. Canning, Engineer, Mill Street, Newport Mon.
„	1	Bicester—Borehole, &c.	Urban District Council	E. F. Wilson, Surveyor's Offices. Launton Road, Bicester.
„	1	Cardiff—Dredging	Railway Co...	H. Ree. Engineer to Company, Dock Offices Cardiff.
„	1	Pickering, Yorks—Water Supply Works	Rural District Council	J. E. Parker, Engineer, Post Office Chambers, Newcastle-on-Tyne.
„	1	Rishworth, Yorks—Pipe Laying	Urban District Council	R. Horsfall & Son, 22A Commercial Street, Halifax.
„	2	Sheffield—Plant	Electric Light Committee	S. E. Fedden, General Manager, Commercial Street, Sheffield.
„	2	Central Australia—Railway	South Australian Government	Agent-General for South Australia, London.
„	4	Edinburgh—Electricity Meters	Corporation	Resident Electrical Engineer, 5 Dewar Place, Edinburgh.
„	4	Banbury—Alterations, &c., to Heating Apparatus	Guardians	E. L. Fisher, Union Offices, Banbury.
„	4	Glasgow—Cables. &c.	Corporation	W. A Chamen, 75 Waterloo Street, Glasgow.
„	4	Macclesfield—Laying Water Mains	Rural District Council	J. Thorpe, King Edward Street, Macclesfield.
„	4	Settle—Waterworks	Rural District Council	T. A. Foxcroft, Surveyor, Town Hall. Settle.
„	4	Bury—Blackford Bridge Improvement Works	Corporation	W. C. Hall, County Bridgemaster, Preston
„	5	London. S.W—Fire Float	London County Council	Clerk. County Hall, Spring Gardens. S.W.
„	5	New Mills—Gasholder	Urban District Council	J. Pollitt. Clerk, Town Hall, New Mills.
„	6	Leavesden and Caterham—Fire Hydrants, &c.	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
„	7	Holywell, Flints—Water Works	Rural District Council	C. A. Atkinson, 11 Tithebarn Street, Liverpool.
„	7	Southampton—Reconstructing Quay	Harbour Board	E. C. Poole, Engineer, Town Quay, Southampton
„	7	Dublin—Light Ship	Commissioners of Irish Lights	O. Armstrong, Secretary, Irish Lights Office, Dublin
„	7	Uppingham—Waterworks	Trustees of Uppingham School	G. & F. W. Hodson, Engineers, Bank Chambers, Loughborough.
„	9	Lisbon—Metal and Stone Bridge	Ministry of Public Works	Commercial Intelligence Branch Bd. of Trade 50 Parliament St,S.W
„	11	Gartcosh—Superstructures of Underbridges	Caledonian Railway Co	Company's Divisional Engineer, 16 Killermont Street.
„	11	Belfast—Steam Ferry Boat	Harbour Commissioners	W. A. Currie. Secretary. Harbour Office, Belfast.
„	11	Liverpool—Two Boilers, &c	—	E. Kirby & W. E. Willink, 5 Cook Street, Liverpool.
„	12	London, S W.—Tramways Works	London County Council	Engineer's Department, County Hall, Spring Gardens, S.W.
„	12	Cairo. Egypt—Electrical Power Transmission	Egyptian Government	Public Works Department, Cairo.
June	8	Brighton—Electrical Plant	Town Council	A. Wright, Star Chambers 30 Moorgate Street, E C.
July	1	Rangoon—Electric Supply Undertaking	Municipal Committee	Ogilvy, Gillanders & Co., 67 Cornhill. E.C.
„	1	Penybont, Wales—Sewerage Works	Rural District Council	Burnett & Hurley, 10 Bridgend Rd., Tondu, Aberkenfig, Glamorgan
		IRON AND STEEL:		
April	30	Devonport—Stores	Gas Committee	S. E. Stevenson, Engineer, Gasworks, Devonport.
„	30	Glasgow—Smith Work, and Manholes and Gratings	Corporation	Office of Public Works, 64. Cochrane Street, Glasgow.
„	30	London. E.C.—Cotters, &c.	Bengal-Nagpur Railway Co., Ltd	Company's Office, 132 Gresham House. E C.
May	1	Erdington, near Birmingham - 500 Ashbins	Urban District Council	H. H. Humphries, Engineer, Public Hall, Erdington.

THE LONDON DRAWING AND TRACING OFFICE.

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Complete List of Contracts Open *—continued.*

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED
		IRON AND STEEL—*cont.*		
May	1	London, S.W.—By-Law Tablets	London County Council ..	Parks' Department, 11 Regent Street, S.W.
,,	2	Chelmsford Fencing	Joint Hospital Board	A. S. Duffield, 96 High Street, Chelmsford
,,	4	Macclesfield—Pipes	Rural District Council	J. Thorpe, King Edward Street, Macclesfield.
,,	5	Exeter—Pipes	Council	City Engineer, 7 Southernhay West, Exeter.
,,	5	Bradford—Castings, Bolts, &c	Cleansing Committee	F. Stevens, Town Clerk, Town Hall Bradford.
,,	5	Levenshulme—Manhole Covers, Grids, &c	Urban District Council	J. Jepson, Surveyor, 8A Tiviot Dale, Stockport.
,,	8	Pontypridd—Ironmongery Iron and Steel, &c.	Gas Committee	E. Jones, Gas Engineer, Treforest.
,,	9	Egremont—Pipes, Iron and Steel, &c.	Wallasey Urban District Council	Engineer, Gas and Waterworks, Great Float, Birkenhead.
,,	9	Egremont—Iron and Steel, &c.	Wallasey Urban District Council	Manager, Egremont Ferry, Cheshire.
,,	11	Freshwater and Totland, I.W.—Castings, Pipes, Manholes, &c	Isle of Wight R.D.C.	W. B. G. Bennett, Son & Berry, Midland Bank Chambers Southampton.
June	15	Bangkok, Siam—Permanent-way Materials	Royal Siamese State Railways ..	Director-General, Gehots, Bangkok.
,,	15	Bangkok, Siam—Railway Stores	Royal Siamese State Railways ..	Siamese Legation, London.
		PAINTING AND PLUMBING:		
April	30	Devonport—Lead Tube Paints, Oils &c	Gas Committee .. — ..	S. E. Stevenson Engineer, Gasworks, Devonport.
,,	30	Glasgow—Painter and Plumber Work	Corporation	Office of Public Works, 61 Cochrane Street Glasgow.
,,	30	Wolverhampton Painting, &c.	Guardians	Superintendent, Cottage Homes, Wednesfield.
May	1	Earlsheaton Dewsbury—Painting	Soothill Nether Council	H. Ward, Surveyor, Earlsheaton, near Dewsbury.
,,	4	Winwick, Warrington—Decorating Asylum Recreation Hall..	Lancashire County Asylum Visiting Committee.	H. Ellis, Clerk, County Asylum, Winwick.
,,	4	Halifax—Painting, &c	School Board	W. H. Ostler, Clerk, School Board Offices, Halifax.
,,	4	Leeds—Painting, Cleaning Down, &c.	——	City Engineer Municipal Buildings, Leeds.
,,	4	London, S.E.—Painting, &c.	Guardians	H. C. Mott, 286 High Street, Lewisham, E.C.
,,	4	Selby—Painting	Guardians	Master of the Workhouse, Selby.
,,	4	Wigmore, West Bromwich—Painting, Colouring, &c	Wallsall & W. Bromwich Sch. Bd	J. W. Allen, Architect, High Street, West Bromwich.
,,	5	Milnrow, Lancs—Painting and Decorating Offices	District Council	W. H. Foster, Surveyor, Council Offices, Milnrow
,,	6	London, S.W.—Painting &c.	St. George's (Hanover Square) Guardians.	W. H. Chappell, Clerk of Works, Workhouse, Fulham Road, West Brompton, S.W
,,	7	Southampton—Painting, &c.	Corporation	W. Matthews Waterworks Engineer, Southampton.
,,	8	Pontypridd—Oils, Paints, &c.	Gas Committee	E. Jones, Gas Engineer, Treforest.
,,	9	Dartmouth—Paint, Oil, &c...	Port Sanitary Authority	O. S. Bartlett, Clerk, Offices, Dartmouth.
,,	9	Egremont—Paint, Oils, Lead-Pipe, &c	Wallasey Urban District Council	Engineer, Gas and Water Works, Great Float, Birkenhead.
,,	9	Egremont—Lead-Pipe Oils, Paints, &c.	Wallasey Urban District Council	Manager, Egremont Ferry, Cheshire
,,	11	Wanstead—Painting, &c.	School Board	J. T. Brassey, 70-71 Bishopsgate Within, E.C.
		ROADS AND CARTAGE:		
April	30	Cramlington—Whinstone	Urban District Council	R. Nicholson, Clerk, Morpeth.
,,	30	Scarborough—Approach Road	Town Council	E. T. Beard & H. W. Smith, Engineers, Town Hall, Scarborough.
,,	30	Devonport—Cartage, &c.	Gas Committee	S. E. Stevenson, Engineer, Gasworks, Devonport
,,	30	Glasgow—Cartage and Paving Work, Materials, &c.	Corporation	Office of Public Works, 61 Cochrane Street, Glasgow.
,,	30	Pontlottyn Glamorganshire—Roads and Drains	——	Gustard & Waddington, Tredegar Chambers, Bridge St., Newport.
,,	30	Staines—Vans and Pumps	Rural District Council	G. W. Manning, Surveyor, London Road, Ashford, Staines.
,,	30	Baildon—Road Works	Urban District Council	J. Bentley Clerk Council Offices, Baildon.
,,	30	Gateshead—Paving, &c.	——	Borough Engineer, Town Hall, Gateshead.
,,	30	Stockport—Street Works	Highways & Sewers Committee	J. Atkinson, Borough Surveyor, St. Petersgate, Stockport.
May	1	Ashford, Kent—Granite	Urban District Council	W. Terrill Surveyor, North Street, Ashford, Kent.
,,	1	Didsbury, Lancs—Paving Works	Withington U.D.C.	A. H. Mountain Surveyor, Town Hall, West Didsbury.
,,	2	Bexhill—Making-up Streets	Corporation	G. Ball Borough Surveyor, Town Hall, Bexhill.
,,	2	Blaengwynfi—Private Street Improvment Works	Glyncorrwg U.D.C.	W. P. Jones, Surveyor, Council Offices, Cymmer Port Talbot.
,,	4	Uttoxeter, Staffs—Materials, &c.	Rural District Council	J. Preston Surveyor, Woodlands, Uttoxeter.
,,	4	Grimsby—Footpaths, &c.	——	H. G. Whyatt, Town Hall Square, Grimsby.
,,	4	London, N.—Roads and Sewers	Society of Licensed Victuallers	G. Treacher, 73 Moorgate Street, E.C.
,,	5	Dover—Watering and Cartage, &c.	Town Council	H. E. Stilgoe, Town Hall Dover.
,,	5	Milnrow, Lancs—Macadam Slag, &c.	District Council	W. H. Foster, Surveyor, Council Offices Milnrow.
,,	5	London, S.W.—Repaving	London County Council .. .	Engineers' Department, County Hall, Spring Gardens, S.W.
,,	5	Bradford—Street-Sweeping Machines, &c.	Cleansing Committee	F. Stevens, Town Clerk, Town Hall Bradford.
,,	5	Levenshulme—Kerbs, Flags, &c.	Urban District Council	J. Jepson, 8A Tiviot Dale, Stockport.
,,	5	Bromley—Tar Paving	Urban District Council	Surveyor, Council Offices, Bromley, Kent.
,,	5	Bromley—Materials	Urban District Council	Surveyor, Council Offices, Bromley, Kent.
,,	6	South Stoneham Hants Steam Rolling	Rural District Council	E. T. Westlake 20 Portland Street, Southampton.
,,	6	South Stoneham—Steam Hauling	Rural District Council	J. Cudlipp, District Surveyor Old Netley.
,,	6	Ashbourne—Granite	Urban District Council	W. Stringfellow, Surveyor, Ashbourne.
,,	6	Hemsworth, near Wakefield—Road Widening	Rural District Council	T. H. Richardson Surveyor, Hemsworth.
,,	8	Chelmsford—Repairing, &c	Rural District Council	H. G. Warne, Surveyor Avenue Chambers Market Rd,, Chelmsford.
,,	9	Church Lancs—Flags, Kerbs, &c.	Urban District Council	W. E. Wood, Surveyor, Church.
,,	13	Todmorden—Street Improvements	——	C. R. Pease, Borough Engineer, Todmorden Town Hall.
		SANITARY:		
April	30	Glasgow—Pipes and Sewer Bottoms, &c...	Corporation	Office of Public Works, 64 Cochrane Street, Glasgow.
,,	30	Greenwich—Barging away Refuse	Borough Council	F. Robinson, Town Clerk, Town Hall, Greenwich Road, S.E.
,,	30	Staines—Vans and Pumps for Cesspool Cleansing	Rural District Council	G. W. Manning, Surveyor, London Road, Ashford, Staines.
May	1	Hull—Sewers	Corporation	A. E. White, City Engineer, Town Hall, Hull.
,,	4	Blackpool—Pipes, &c.	Joint Sewage Committee ..	A. Hindle, 44 Abingdon Street, Blackpool.
,,	4	Blackpool—Sewerage Works	Joint Sewage Committee ..	A. Hindle, 44 Abingdon Street, Blackpool.
,,	5	Milnrow, Lancs—Sanitary Tubes &c.	District Council	W. H. Foster, Surveyor, Council Offices, Milnrow.
,,	5	Dover—Scavenging	Town Council	H. E. Stilgoe, Engineer, Town Hall, Dover.
,,	5	Hertford—Sewers &c.	Corporation	J. H. Jevons, Borough Engineer, The Wash, Hertford.
,,	5	Levenshulme—Sewers and Drain Pipes, &c.	Urban District Council	J. Jepson, 8A Tiviot Dale, Stockport.
,,	5	Bromley—Sewerage Works	Urban District Council	Surveyor, Council Offices, Bromley, Kent.
,,	6	Burton-upon-Trent—Sewerage Works	Corporation	G. T. Lynam, Borough Engineer, Burton-on-Trent.
,,	7	Derby—Filtering Material	Corporation	J. Mansergh & Sons, 5 Victoria Street, Westminster.
,,	7	Camelford, Cornwall—Sewerage Works	Rural District Council	S. W. Jenkin & Son, Engineers Liskeard.
,,	9	Egremont—Stores	Wallasey U.D.C.	Manager, Egremont Ferry, Cheshire.
,,	9	Bridgend—Sewerage Works..	Ogmore and Garw U.D.C. ..	H. D. Williams, Council Offices, Blackmill, Bridgend, Glam.
,,	12	Richmond, Surrey—Lime, Sulphate of Alumina, &c.	Main Sewerage Board	W. Fairley, Engineer, West Hall Road, Kew Gardens, S.W.
,,	13	Drighlington—Sewerage Works	Urban District Council	J. Waugh, Engineer, Sunbridge Chambers, Bradford.
,,	14	Freshwater and Totland, I.W.—Sewerage Works	Isle of Wight R.D.C.	W. B. G. Bennett, Son & Berry, Midlnd. Bnk. Chbrs., Southampton.
,,	18	Stone, Staffs—Sewerage Works	Rural District Council	J. B. Norris, 21 High Street, Stone.
		TIMBER:		
May	5	Bradford—Timber	Cleansing Committee	F. Stevens, Town Clerk, Town Hall, Bradford.
,,	8	Pontypridd—Timber	Gas Committee	E. Jones, Gas Engineer, Treforest.
,,	9	Egremont—Timber	Wallasey U.D.C.	Manager, Egremont Ferry, Cheshire.

List of Competitions Open.

DATE OF DELIVERY.		DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &C.	BY WHOM ADVERTISED.
April	30	Fenton, Staffs—Library	£60, £30.	£1 1s.	S. A. Goodall, Surveyor, Town Hall, Fenton, Staffs.
,,	30	Sunderland—Alterations to Hall	£100, £50, £25.	£[illegible]	J. W. Moncur, Borough Engineer, Town Hall, Sunderland.
May	1	Manchester—Infirmary	——	——	W. L. Saunder, General Superintendent, Royal Infirmary, Manchester.
,,	13	Stockton-on-Tees—Girls' High School	£25, £15 10s.	——	C. J. Archer, 77 High Street, Stockton-on-Tees.
,,	30	Gillingham, Kent—Public Swimming & Slipper Baths	£20, £10, £5.	——	F. C. Boucher, Clerk to Gillingham U.D.C., New Brompton, Kent.
June	18	Limerick—Library and Museum	£75, £25.	——	W. M. Nolan, Town Clerk, Town Hall, Limerick.
,,	30	Blackpool—Picture Poster	£100, £50, £30, £20.	——	C. Noden, Corporation Advertising Manager, Town Hall, Blackpool.
No date		Sheffield—122 Artizans' Dwellings	£50, £30, £20	£1 1s.	C. F. Wike, City Surveyor, Sheffield.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

Aldershot.—For the erection of the new public offices and fire station, and for the boundary walls and gates for the Aldershot Town Council:—

Warnell & Son, Rugby	£9,011	0	0
Higgs & Outhwaite, Cobham	8.925	0	0
Foster & Dicksee, Rugby and London	8,888	0	0
Holliday & Greenwood, Ltd., Brixton	8,847	0	0
R. Randall, Woolwich	8,695	0	0
W. H. Lorden & Son, Upper Tooting	8,666	0	0
B. E. Nightingale, Lambeth	8,665	0	0
Walter Lawrence & Son, Waltham Cross	8,449	0	0
Mitchell Brothers, Shalford	8,42.	0	0
Peerless, Dennis & Co., Eastbourne	8 384	0	0
Jenkins & Sons, Southampton	8,375	0	0
G. Hughes, Wokingham	8,321	16	9
G. Kemp, Aldershot	8,112	0	0
Tompsett & Co., Farnham	8,107	7	0
Goddard & Son, Farnham	8,100	0	0
Frank Milton, Witley	8,040	0	0
Minter & Johnston, Westminster	7,811	0	0
Martin, Wells & Co., Aldershot	7,646	13	0
J. Harris,* Basingstoke	7,403	3	3

* Accepted.

Axbridge.—For the supplying about 550 tons of cast-iron socket water-pipes, 6in. to 3in. in diameter, to be delivered at Cheddar Station or other specified place, for the Axbridge Union Rural District Council. Mr. A. Powell, engineer, 3, Unity Street, Bristol:—

G. N. Haden & Sons, Trowbridge	£7,041	0	0
Birtley Iron Co., Durham	3,990	12	3
J. E. MacEwen & Co., Glasgow	3,715	0	0
Cochrane & Co , near Dudley	3,609	1	8
Staveley Coal & Iron Co., near Chesterfield	3,543	2	7
D. Parsons & Sons, Brierley Hill	3,500	17	6
C. Jordon & Co.,* Pillgwenlly Foundry, Newport, Mon.	3,452	5	6
T. Spittle & Co., Newport, Mon.	3 404	5	9
D. M. Stevenson & Co , Glasgow	3,401	13	1
Isca Foundry Co., Newport, Mon.	3,369	4	6
A. G. Cloake, London, E C.	3,219	0	0

* Accepted.

Bournemouth.—For the erection of a new cricket and football pavilion at King's Park, for the Bournemouth Town Council. Mr. W. F. Lacey, M.I.C.E., borough engineer and surveyor:—

E. S. Griffin, Broadstone, Wimborne	£2,411
W. Hoare, Bournemouth	2,119
J. McWilliam & Son, Bournemouth	1,998
Jenkins & Sons,* Ltd., Bournemouth	1,953

* Accepted.

Bridgwater.—For the erection of new sorting office at Bridgwater, for H.M. Office of Works, &c.:—

				A
H. A. Forse & Sons	£3,064	0	0	£5
C. Bryer, junior	2,139	0	0	45
T. Stockham	2,079	0	0	12
H. W. Pollard*	1,732	5	7	30
F. Scott	1,680	18	6	10
Westbury & Jarman	1,489	17	6	15

* Accepted. A. Credit old materials.

Cowbridge (Glamorgan)—For the construction of a new road from Lanharry Common to Lanharran, for the Cowbridge Rural District Council. Mr. G. E. Morris, A.M.I.C.E., surveyor, Llanbethian, Cowbridge:—

Barnes, Chaplin & Co.. Cardiff	£2,725
W. Cooksley, Miskin, Pontyclun	2,643
W. David, Brynna	2,463
Jones & Sen, Coychurch	2,284
W. Raikes, Coychurch	2,036
Osmond Brothers, Ely	2,036
T. Rees, Ely	1,975
E. H. Page, Cardiff	1,951
J. E. Evans,* Cardiff	1,685

* Accepted.

Jarrow.—For excavating and forming macadam and paved roads and concrete footpaths for Howard Street, Randolph Street, Percy Street, and the following back streets:—Back Monton Terrace, Back Dee Street North, Back St. Paul's Road; back streets between Salem Street and Harold Street, between Cobden Street and Howard Street, between Russell Street and Wilberforce Street, between Derby Street and Percy Street, between Percy Street and Raglan Street, and Back Hope Street, for the Corporation. Mr. J. Petree, borough surveyor:—

W. Kennedy, Jarrow	£2,331	10	5
G. Wells, South Shields	2,081	6	3
G. Thornton & Co., South Shields	1,868	13	7
T. Callaghan,* 40, Staple Road, Jarrow-on-Tyne	1,624	18	6

* Accepted.

Hazel Grove (Stockport).—For the erection of new club premises, Napier Street, Hazel Grove, for the Hazel Grove and District Reform Club:—

G. Oldham, Hazel Grove	£1,105	0	0
Vernon & Smith, Hazel Grove	1,098	10	0
W. B. Beattie, Stockport	1,080	0	0
S. Daniels,* Buxton Road, Hazel Grove, near Stockport	1,071	0	0

* Accepted.

Hebburn.—For the making of certain streets in Hebburn, for the Urban District Council. Mr. Curry, surveyor:—

Wardlaw, South Shields	£3,720	13	2
Thornton, South Shields	3,399	15	5
Spur, Whitley Hay	3,315	10	5
Fisher, Gateshead	3,017	2	0
Robson, Newcastle	2,936	13	6
Brown, Gateshead	2,901	7	6
G. Simpson,* Newcastle	2,686	19	3

* Accepted. [Surveyor's estimate, £3,510.]

Leavesden (Herts).—For the erection of a home for female attendants at the Leavesden Asylum, for the Metropolitan Asylums Board:—

S. Maynard & Son, Aylesbury	£7,600	18	10
G. Munday & Sons, Tower Hill, E.C.	7,549	17	2
Goddard & Sons, Dorking	7,289	0	0
G. & J. Waterman, Watford	7,217	0	0
Spiers & Sons, St. John's Wood, N.W.	7,169	0	0
C. Miskin & Sons, St. Albans	7,085	0	0
G. Godson & Sons, Kilburn Lane, N.W.	6,990	0	0
Treasure & Son, Upper Holloway, N.	6.965	0	0
Tyler & White, Watford	6,950	2	6
J. Parnell & Son	6,928	18	0
McCormick & Sons, London, N.	6,922	0	0
E, West, Chelmsford	6,865	0	0
G. Wiggs, Watford	6,712	0	0
W. Lawrence & Son, Waltham Cross, N	6,667	0	0
H. Wall & Co., Kentish Town, N.W.	6,596	0	0
R. L. Tonge, Watford	6,534	19	3
Martin Wells & Co., Ltd., Vauxhall, S.E.	6,526	0	0
H. Martin,* Thenford Street, Northampton	6,467	0	0

* Accepted.

London.—For roads and footpaths at High Wood School, for the Metropolitan Asylums Board:—

S. Parmenter Braintree	£4,997	0	0
Wilson, Border & Co., Romford	4,560	0	0
Fry Brothers, Greenwich	4,190	0	0
T. Adams. Wood Green, N.	3,849	0	0
J. Meston, North Kensington, W.	3,847	0	0
J. Hale, N.W.	3,8.1	16	4
J. Jackson, Forest Gate, E.	3,700	0	0
Lawrence & Thacker, Clapham Common, S.W.	3,250	0	0
D. T. Jackson, Barking	3,200	0	0
Practical Landscape Gardening and Estate Development Co., Ltd., S.W.	2,960	0	0
J. C. Trueman, Swanley	2,869	0	0
McCormick & Sons * London, N.	2,789	0	0

[Landscape architect's revised estimate, £3,403 10s.]

* Accepted.

London, E.—For the erection of two blocks of workmen's dwellings upon the King John's Court area, Limehouse, E., for the Stepney Borough Council. Mr. W. M. Jameson, 15, Great Alie Street, Whitechapel, E., borough engineer:—

Courtney & Fairbairn, Camberwell, S.E.	£6,985	0
Harris & Wardrop, Limehouse, E.	6,930	0
Patman & Fotheringham, Islington, N.	6,973	0
L. F. Lamplough, Kensal Rise, W.	6,937	0
A. Porter. Tottenham, N.	6,804	0
H. Wall & Co., Kentish Town, N.W.	6,797	0
Sabey & Son, N.	6,750	0
R. & E. Evans, Peckham. S E.	6,581	0
Martin, Wells & Co., Vauxhall, S.E.	6,552	0
H. L. Holloway, Deptford, S.E.	6,539	0
J Shelbourne & Co , E C.	6,473	0
S. E. Moss, Delsford, Southend	6,346	10
Thomas & Edge, Woolwich, S.E.	6,326	0
A. E. Symes,* Carpenters Road, Stratford, E.	6,298	0

* Accepted.

London, S.E.—For the erection of a new police station at North Woolwich. Mr. J. Dixon Butler, surveyor to the Metropolitan Police. Quantities by Messrs. Thurgood, Son & Chidgey, Charing Cross Chambers, Duke Street, Adelphi:—

Wells & Son	£9,475	Perry & Co.	£8,700
Lascelles & Co.	8,972	Grover & Sons	8,647
Lawrence & Sons	8,948	Lathey Brothers	8,545
Williams	8,942	Chessum & Sons	8,499
Hood	8,919	Lorden & Son	8,388
F. & H. F. Higgs	8,886	Richardson	8,032
Holloway Brothers	8,779		

London, N.—For the making and completing of roads, paths, &c., at the Infirmary, Highgate Hill, Upper Holloway, N., for the Guardians of St. Mary, Islington. Mr. W. Smith, 65, Chancery Lane, W.C.:—

Ballard, N W.	£6,276	0	0
Goddard & Co , Caledonian Road	4,912	5	4
Adams, Green Lanes	4,336	17	9
Dunmore	4,263	0	0
Jackson, Finsbury Park	4,180	0	0
International Asphalt Co.	4,047	0	0

London, S.W.—For the erection of stables at Chelsea, for Mr. H. Covington. Mr. T. Wilson, architect, 34, New Bridge Street, E.C:—

Patman & Fotheringham	£3,650
L. Whitehead & Co.	3,615
C. Wall	3,590
H. Wall & Co	3,439
Gould & Brand	3,420
Nightingale	3,396
J. Chessum & Sons	3,320

London, S.W.—For shop front and fittings for Dairy at Frognal Parade, Hampstead, N.W. (exclusive of marble and granite work), for Messrs. J. Richards Ltd. Mr. T. Wilson, architect, 34, New Bridge Street, E.C.:—

Williams	£402
H. Wall & Co.	367
J. Pugh*	355

* Accepted.

Radyr (near Cardiff).—For the erection of a church at Radyr, near Cardiff, for the Rev. D. Phillips, M.A., rector, and Committee. Mr. G. E. Halliday, F.R.I.B.A., architect, Cardiff:—

Lattey & Co., Cardiff	£2,602	12	0
W. Cox, Llandaff	2,365	15	2
C. C. Dunn, Cardiff	2,132	0	0
Couzens & Co., Cardiff	2,045	10	0
Williams & Hoare, Roath	1,979	0	0
Beames & Nephew, Roath	1,922	0	0
Knox & Wells, Roath	1,879	0	0
A. W. Cadwallader,* Fairoak Road, Roath	1,685	0	0

* Accepted.

Ridge.—For rebuilding the "Old Guinea" for Benskin's Watford Brewery Co., Ltd. Mr. Percival C. Blow, A.R.I.B.A., architect, 7 London Road, St. Albans:—

W. Sharp, St. Albans	£1,097
Miskin & Son, St. Albans	970
J. T. Bushell	938
Boff Brothers,* Park Street	905

* Amended and accepted.

St. Albans.—For the erection of a residence, Spencer Park, for Mr. H. W. Edwards. Mr. Percival C. Blow, A.R.I.B.A., architect, 7 London Road, St. Albans:—

W. Sharp, St, Albans	£1,154	10	0
F. Stanley, St. Albans	1,150	0	0
W. Vail & Co., St. Albans	1,143	15	0
Whibley & Jervis	1,140	0	0
J. T. Bushell, St. Albans	1,128	16	5
E. Dunham	1,111	0	0
Hammond & Son, St. Albans	1,079	17	5
Tyler & White, Watford	1,050	0	0
Warton & Dunstall, Bedford	1,024	0	0
C. W. Dumpleton,* St. Albans	975	0	0

* Accepted.

St. Albans.—For the erection of a residence, Kingsbury Road, for Herr Keller. Mr. Percival C. Blow, A.R.I.B.A., architect, 7, London Road, St. Albans:—

Whibley & Jervis	£753	10
J. T. Bushell	749	12
E. Dunham	695	0
F. Stanley	675	0
W. Sharp	662	17
Dumpleton	622	0
Hammond & Son*	584	0

* Accepted.

St. Albans.—For the erection of cottage for Miss Rowe, Sandridge Road. Mr. Percival C. Blow, A.R.I.B.A., architect, 7, London Road, Albans:—

J. T. Bushell	£275	0
Dumpleton	247	10
Goodchild & Sons	240	0

Woolston (Hants).—For certain private street works in ten roads in the district about three miles in length Itchen Urban District Council. Mr. T. A. Collingwood, surveyor:—

Mott & Sons, Staines	£9,524	0	10
J. C. Truman, Swanley Kent	5,825	0	0
Streeters & Todhunter, Godalming	5,657	0	0
F. Osman, Southampton	5,187	0	0
F. W. Pettit,* Itchen	5,122	6	0

* Accepted.

Middlesex.—For works of road widening, surface-water sewers, paving, channelling, kerbing, retaining walls, &c., in the urban districts of Tottenham, Wood Green, Hornsey, Finchley, Willesden, Hendon, Kingsbury, and in the rural district of Hendon, for the Middlesex County Council. Mr. H. T. Wakelam, M.I.C.E., county surveyor:—

	Contract No. 1A.	Contract No. 3A.	Contract No. 5A.
D. R. Paterson, N.W.	£38,297 5 0	£29,106 6 6	£10,659 16 6
H. Morecroft, Acton, W.	27,289 0 0	17,783 0 0	7,998 0 0
R. Ballard, Ltd , Child's Hill, N.	25,152 0 0	13,016 18 6	6,716 0 0*
J. A. Dunmore, Crouch End	23.762 5 1	17,682 6 6	—
W. Neave & Son, Kensal Rise	21,801 0 0	15,945 0 0	8,425 0 0
C. Wall, Chelsea	21,593 0 0	13,752 0 0	7,476 0 0
W. Griffiths & Co., E.C.	21,487 18 6	13,596 12 3	8,100 18 2
T. Adams, Wood Green	21.400 5 7	13,769 1 11	8,124 5 11
A. Kellett & Sons, Willesden	21,245 17 8	12,778 5 2*	7,155 13 6
Grounds & Newton, Tottenham	21,238 0 0	—	—
C. Ford, Harlesden	20,514 0 0*	—	7,110 0 0
Nowell & Co., Kensington	—	—	8,504 0 0
Wimpey & Co., Acton, W.	—	—	8,640 0 0
J. G. White & Co., College Hill, E.C.	—	—	8,847 15 7

* Accepted.

New Companies.

PATENT STONE-DRESSING TOOL CO., LTD., 51, Wickerane, Sheffield. Capital: £8,000 in £1 shares.

ANTO-GAS PLANT CO., LTD., engineers, contractors, &c. Capital: £2,000 in £1 shares.

CHARLES WATERHOUSE & CO., LTD., stone merchants' &c., New Dock Basin. Chadwick Street, Hunslet, Leeds. Capital: £5,000 in £1 shares.

PEARSON'S ANTISEPTIC CO., LTD., dealers in disinfectants and sanitary compounds, &c. Capital: £1,000 in £1 shares.

STONEYCOMBE LIME AND STONE CO., LTD., quarry proprietors, lime and stone merchants, Ipplepen and Chudleigh, Devon. Capital: £2,000 in £1 shares.

MESSRS. ASHBURNER, LTD., lime burners, builders and contractors, &c., Market Street, Dalton-in-Furness. Capital: £5,000 in £10 shares.

A FEW PRESS OPINIONS OF

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THE

BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

May 6, 1903. Vol. 17, No. 430.

9, East Harding Street, E.C.

The "Alhambra" Rumour. It is rumoured that there is much more than a possibility the London County Council will purchase the "Alhambra" and the buildings on either side as a site for its county hall. That would indeed be a splendid achievement after losing the magnificent site at the bottom of the new street to Holborn—a more notable achievement perhaps than the suggested demolition of the Adelphi houses! To the left of the county hall, on the Leicester Square front, would be the new dental hospital, to the right some other styles of architecture in the form of a gilded hotel and the "Empire," while *vis-à-vis* would be the dejected garden with Will of Avon standing sideways and a little fish spouting water on either hand. The Council are badly in need of a civic building where they can collect their scattered forces, but we have not as yet recovered from their recent gross mistakes to have any sympathy even with such a brilliant scheme as the purchase of the "Alhambra" for perhaps three-quarters of a million!

Liverpool Baths Competition. Liverpool is gaining rather an unfortunate reputation for architectural competitions. A fortnight ago we reviewed the competition for baths and tramway offices to be erected on the site of St. George's Dock. Now we have to announce that the scheme is abandoned. The Baths Committee and the Tramways Committee will each submit their own scheme, and we notice that this may be for the dock site "or elsewhere." Possibly it may be thought that the payment of the premiums settles everything in the best possible way; but we hardly think the fourteen unsuccessful competitors will feel equally satisfied. We have already expressed our opinion that the competition was disappointing and that none of the designs exhibited that grasp of the requirements which would lead to wholly convenient buildings being erected therefrom; but we repeat that this was very largely due to the stipulation that the intended Dock Board Offices adjacent should be the keynote for the external treatment of the Corporation building, and the inclusion of too many buildings within the site. The Committees evidently think they can do better themselves. But their action in thus abandoning the scheme will not improve the status of architectural competitions, nor endear the hearts of architects to those held in Liverpool.

Lady Mosaicists. Up among the arches of the great new cathedral at Westminster a "twittering" may be heard, which, on investigation, is found to proceed from a score of young ladies enveloped in overalls. These are the workers on Mr. George Bridge's mosaics—in the chapels of All Souls and of St. Gregory and St. Augustine on either side of the vast nave. Mr. Bridge finds that the young ladies suit his needs admirably, but it must not be supposed that they are there without training. "I have ladies come to me sometimes," says Mr. Bridge, "who think they can set to work at once and earn two or three pounds a week. But that is, of course, absurd. There is a great deal of technique to be mastered, and I estimate that a fairly clever worker needs two years' experience before being put on figure work"—these young ladies have been through the schools and drawn from the "life," so that they are able to handle the mosaic in an intelligent manner. Mr. Bridge's first pupil was his wife, who succeeded so well that he decided to engage other female workers; until we find him here in the cathedral directing quite a school of them. The practice of architecture as a profession for women receives periodical attention but, with a few exceptions, never becomes a reality. For ourselves we do not think it ever will while contractors are men, not always gifted with the tongues of angels: but there is surely a field for women in some of the applied arts connected with architecture where, indeed, the subtler touch of the female hand and the more delicate gauge of the female eye may prove a boon—a possibility to which Mr. Bridge's practical experience gives much hope.

Mural Tablets. In the majority of cases a well-designed mural tablet or medallion is a far more satisfactory means of commemorating anyone than a statue or bust, because, as a rule, there is no proper provision made for the latter, and consequently they look out of place. It is hardly necessary to repeat Ruskin's epithets about the interior of Westminster Abbey; the circumstances in that revered pile are unique, and we should not suppose that the mistake would be made again in any modern cathedral. But the mural tablet, too, can mar the interior of a church. Who does not know those staring marble erections spread profusely between the aisle windows, crossing piers and pilasters and generally spoiling the proportion and lines of the building; not only in churches belonging to past centuries, but in new churches of importance. It would be a great improvement if all such tablets were removed, or replaced by others in keeping with their position.

Dreams of Architecture. Highly-strung natures and imaginative persons must necessarily be subject to dream dreams, and as architecture, in spite of prosaic by-laws, draws on the creative faculty, we may be sure that many men have had strange fantasies of great buildings. But very few will be so grandly mystic as Piranesi's "Dreams," which series of plates he published as a record of his visions during the delirium of a fever. Coleridge once described them to De Quincey, and the impression so reacted on the latter's mind that he too dreamt dreams of architecture in the early stage of his opium-eating malady; in which dreams he saw such pomp of cities and palaces "as was never yet beheld by the waking eye"—fabrics of diamond and of gold, with alabaster domes and silver spires, blazing terrace upon terrace, serene pavilions bright in avenues disposed, and towers begirt with battlements that on their restless fronts bore stars. Some of Piranesi's plates represented vast halls on the floor of which stood all sorts of engines and machinery, wheels, cables, pulleys, levers, catapults, &c., expressive of enormous power put forth and resistance overcome. Then, says De Quincey, creeping along the sides of the walls you perceived a staircase; and upon it, groping his way upwards, was Piranesi himself: "follow the stairs a little further, and you perceive it come to a sudden and abrupt termination, without any balustrade, and allowing no step onwards to him who had reached the extremity, except into the depths below. Whatever is to become of poor Piranesi—you suppose, at least, that his labours must in some way terminate here. But raise your eyes, and behold a second flight of stairs still higher, on which again Piranesi is perceived, but this time standing on the very brink of the abyss. Again elevate your eye, and a still more aërial flight of stairs is beheld, and again is poor Piranesi busy in his aspiring labours: and so on, until the unfinished stairs and Piranesi both are lost in the upper gloom of the hall."

ST. PETER'S CHURCH, HAMBLEDON.

A STUDY IN ARCHITECTURAL DEVELOPMENT.

By J. RUSSELL LARKBY.

OFTEN the most interesting feature of ecclesiastical architecture in village churches is the joining together of the work of various centuries, caused probably by lack of funds sufficient to complete the building during one period of influence. The later building often envelopes or altogether hides the earlier structure, but in nearly all cases some traces of the earlier structure are observable. It is of the highest interest to visit a representative building and trace first the lowly Saxon structure, following as far as possible its simple history from the oblong nave and square chancel to the fully-developed building of the fifteenth century. At times, however, the simplicity of the Saxon church is lost; the Normans frequently demolished the Saxon church as not at all suited to the grander ideas of religious environment which they brought from Normandy. The Norman work is so massive that the builders seem to have built for all time, and by them it would have been deemed impossible that in after years the conquest of their massive buildings would be completed by the principle which they entirely ignored, that of light construction combined with strength. In a short time—surprisingly short when we consider the enormous differences of the periods—there arose from the Norman strength the apparently frail but beautiful architecture of the thirteenth century, having indeed a strong claim to be considered as the flower of English architecture.

If we wish to find a church thus illustrating the development of English architecture, we must seek in a district which has been for centuries the seat of a population which, if not abundantly rich in this world's goods, has been on the whole peaceful and contented. Again, the district in which we search must be free to a great extent from any seat of fifteenth-century commerce, when the church-builder followed the great uprising of trade and the consequent abundance of wealth which in those days meant an increase in the quantity of architecture. As, however, an increase of wealth is by no means a necessary element in the greater happiness of the individual, neither on the other hand is such an increase equivalent to an increase in the purity of architecture; of this there is very definite evidence in England.

The county of Hampshire, never the seat of active manufacture, but from time immemorial given up to peaceful agricultural pursuits, would seem to be the district in which to look for our typical church, and in few places is the quiet development of English architecture so well illustrated as at Hambledon. The church embraces Saxon, Norman, Early English, Decorated and Perpendicular features which, if simple, are of considerable interest to the student.

The remains of the Saxon work are somewhat obscured by additions, but they show the building as small and plain, probably very similar to the existing Saxon churches at Boarhunt and Corhampton (see the BUILDERS' JOURNAL for February 11th last). Its extent, however, is somewhat doubtful, but on the accompanying plan (Fig. 1) I have ventured to outline what may be justly regarded as its limits. The projections lettered A over the north arcade are strips of vertical masonry which may well have been pilaster strips on the walls of the Saxon church. Some similar strips also exist in the wall above the south arcade. Further east, and on the north side of the eastern nave, is a line of horizontal masonry (lettered B on plan), though not all necessarily *in situ;* up to the point C or a little beyond may be looked upon as the western termination of the Saxon building. From these evidences the Saxon church seems to have had a total length of about 55ft. and a breadth of 23ft. It may be of interest as throwing some light on the question to compare these measurements with those of the other Saxon churches in the district: —

Corhampton—Length, 55ft.
Breadth, 23ft.
Boarhunt— Length, 60ft.
Breadth, 23ft.

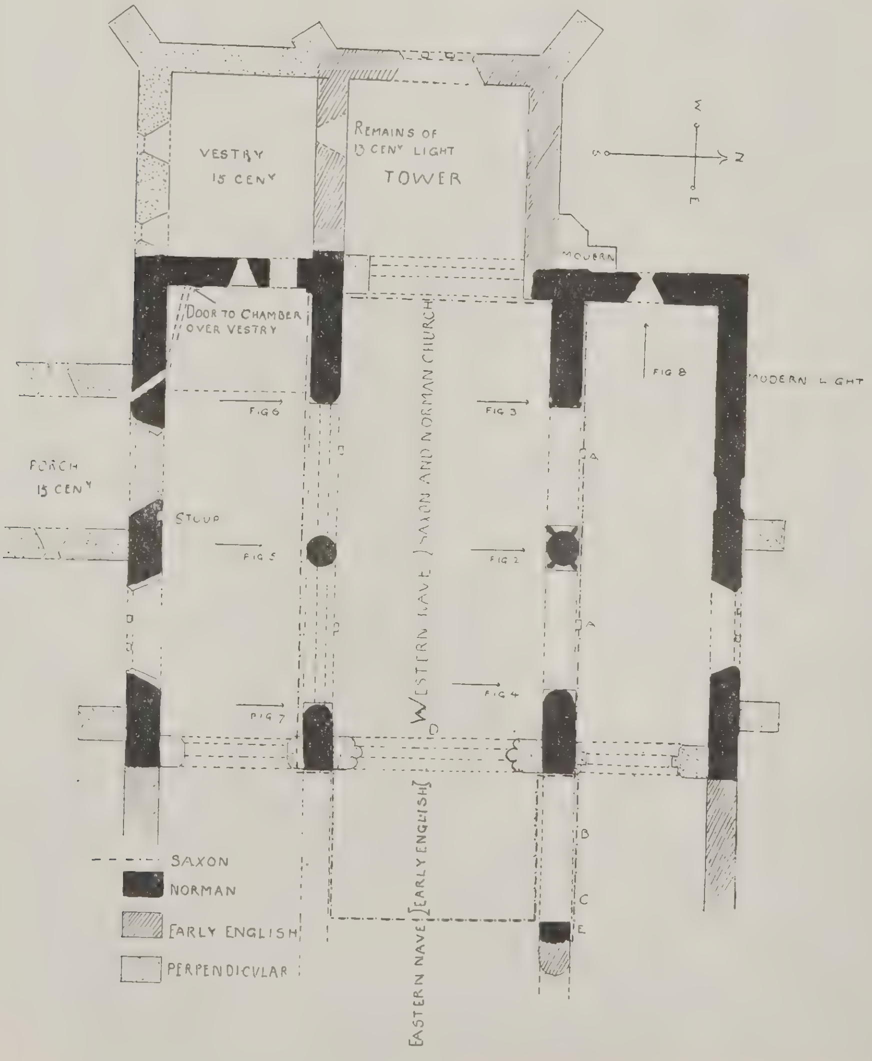

FIG. 1.—PLAN OF WESTERN NAVE, HAMBLEDON.

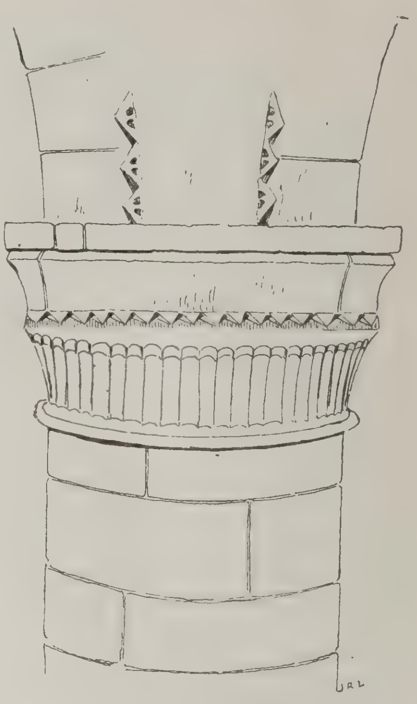

FIG. 2.—CENTRE PIER OF NORTH ARCADE.

It will thus be seen that a measurement of the Saxon remains at Hambledon gives a church of practically the same dimensions as existing Saxon churches in the locality. There is, it is true, a slight discrepancy in length, but in the case of Corhampton the chancel has been renewed in brick, though it probably retains its original size; at Boarhunt, owing to later alterations, the exact western termination of the Saxon church is somewhat uncertain. Allowing for these discrepancies as proving nothing beyond a slight deviation in plan, the measurements are sufficiently near to establish a strong likeness in the three churches.

With the coming of the Norman builder a period of great activity began at Hambledon, and, as in so many other cases, the small dimensions of the Saxon church quite failed to satisfy the religious ambitions of builders who had in their minds the memory of the Abbaye aux Dames at Caen and the other great churches of Normandy. At the same time, the Saxon church was not actually razed to the ground, which seems to suggest that the Normans considered the earlier work good enough to incorporate in their own building. This, however, was the utmost limit of their conservatism, and they proceeded just as they did at other places, and altered the church out of all recognition. The addition of aisles, a possible extension of the chancel—the former a drastic change in ground plan—completed the work of the Norman builder, who, after the sturdy manner of his kind, placed his hand on the walls of Hambledon church in an indestructible manner, so far as anything human can be indestructible.

The arches of the aisles occupy the exact position of the Saxon walls; in fact, they must be cut through the earlier work, since the pilaster strips before mentioned still occupy their original positions. The capitals of the north arcade are shown by Figs. 2, 3, and 4; their piers are massive, and the mouldings illustrate axe-carving in a very unmistakable manner; the arches are extremely massive, semicircular and square-edged, and on the south surface are highly ornamented by a band of nail-head and rosette ornaments, in some places renewed but generally unrestored. All the capitals have the square rudely-moulded abacus, which, as in nearly all early examples, does not follow the outline of the capital underneath. The central column of the arcade (Fig. 2) well illustrates the rule-of-thumb method employed in the production of Norman work; the irregularity, effective in its way, is the natural outcome of the rude methods of the time. The bases are characteristic, consisting of a hollow between two rounds, the whole supported by a plinth with foot ornaments to cover its projecting angles. The other capitals of the arcade are illustrated at Figs. 3 and 4, and speak for themselves. The capitals of the south arcade, although still Norman, illustrate a finer and rather later period in the style (see Figs. 5, 6 and 7). The pointed arches may here be taken as legitimate evidence of later date; they are recessed, and not single as in the more primitive north arcade; the abaci are circular on plan, but still square-edged, thus conforming to the shape of the lower members of the capital. In addition to this, there is a greater precision in the carving, suggesting the use of a finer tool than the axe used in the north arcade. All these points seem to suggest that a considerable time elapsed between the construction of the north and south aisles, not sufficient to alter the fundamental features but long enough to allow of a decided improvement in execution. A glance at the bases will be sufficient to confirm the unity of style, and a comparison of the capitals will clearly illustrate the difference in treatment. The unequal span of the arches is curious, and is another result caused by the lapse of time between their erection; this difference is not very noticeable except on plan.

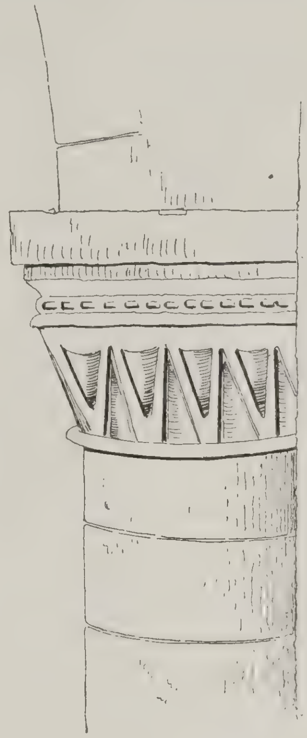
FIG. 4.—EAST RESPOND OF NORTH ARCADE.

In the west wall of the north aisle there is a small Norman window, presumably of the same date as the north arcade (Fig. 8, next page). A similar, but blocked-up, window exists in the south aisle, and by these we are able to establish the western extremity of the building after it emerged from Norman hands.

Hambledon church seems to have been altered in plan during each century of its existence, and in the thirteenth century an alteration greater than the preceding again completely transformed the structure. The Norman architect had evidently taken some pains to preserve the site of the Saxon high altar, and consequently the eastern arm of the church during the twelfth century was not imposing on plan or in elevation; neither could it have well accorded with the somewhat spacious dimensions of the Normanized Saxon nave. The thirteenth-century architect saw this, and in order to give a greater dignity to the chancel, to be obtained only by a lengthening of the church, he attained his object by a method at once striking and original. Wishing to preserve the Norman nave, there arose the novel plan of attaching a thirteenth-century church to the eastern arm of the Saxon building, which in its time had also been altered in the twelfth century. With this alteration the sanctuary was removed eastwards, and the site of the Saxon and Norman high altars now became nothing more than a part of the nave; the church thus has two naves and two chancel arches, *i.e.*, the present chancel arch, and the arch dividing the Norman chancel from the Norman nave (D on plan).

The work in the thirteenth-century nave is much lighter than the adjoining structure, but architecturally it is less satisfactory than the earlier work. The interest here rests mainly on the pillar marked E on plan; its western face exhibits ashlar with axe working, and it at one time stood in the Norman church, even if it does not mark the termination of the Norman structure. On either side of the present chancel arch there is a perpendicular squint, through which an excellent view of the altar may be obtained from the aisles of the eastern nave.

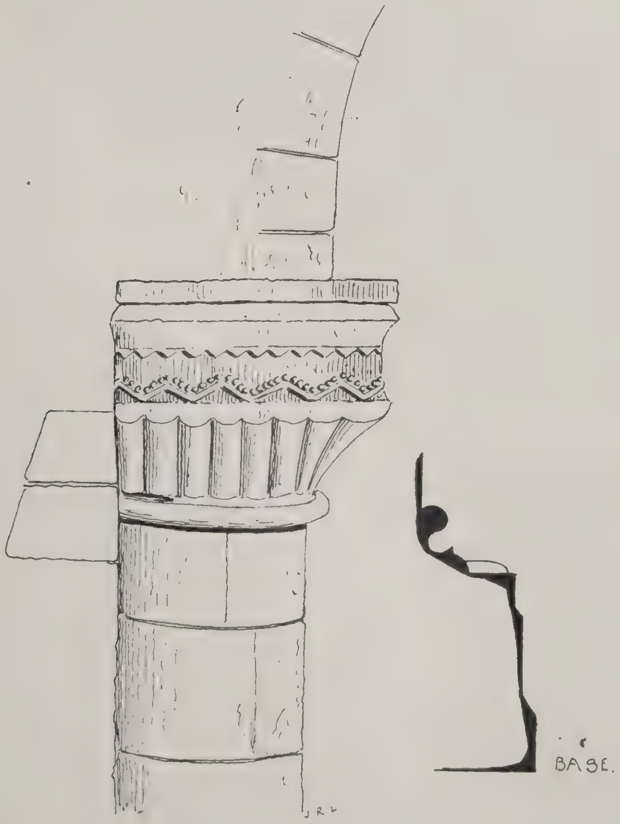

FIG. 3.—WEST RESPOND AND BASE OF NORTH ARCADE.

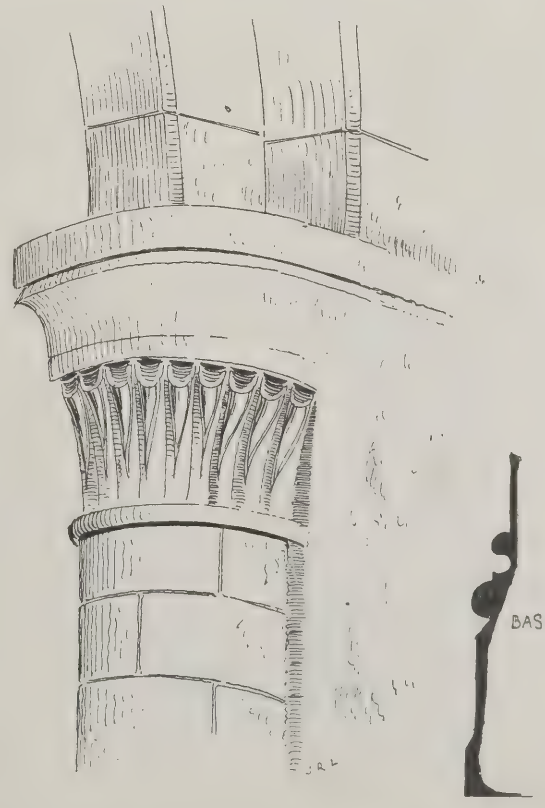

FIG. 7.—EAST RESPOND AND BASE OF SOUTH ARCADE.

B

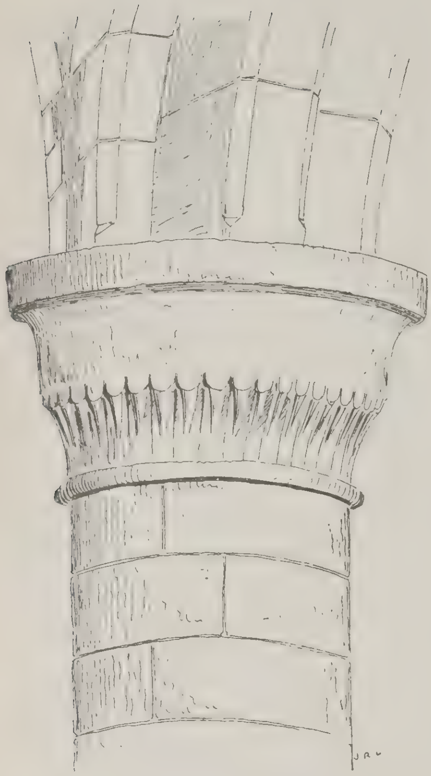

FIG. 5.—CENTRE PIER OF SOUTH ARCADE.

The porch, on the south wall of the western nave, is of considerable height, and its windows high in the wall were for the now destroyed parvis overhead.

During the fifteenth century a vestry was added, communicating with the south aisle of the nave; and over it was a second chamber, connected with the parvis by a gangway.

Standing at the west end of the tower, the extreme length of the church (about 130ft.) shows to great advantage, giving an effect only to be described as beautiful; the floor makes a gradual rise eastward, ending in a reverently tended chancel, which "remains as in times past."

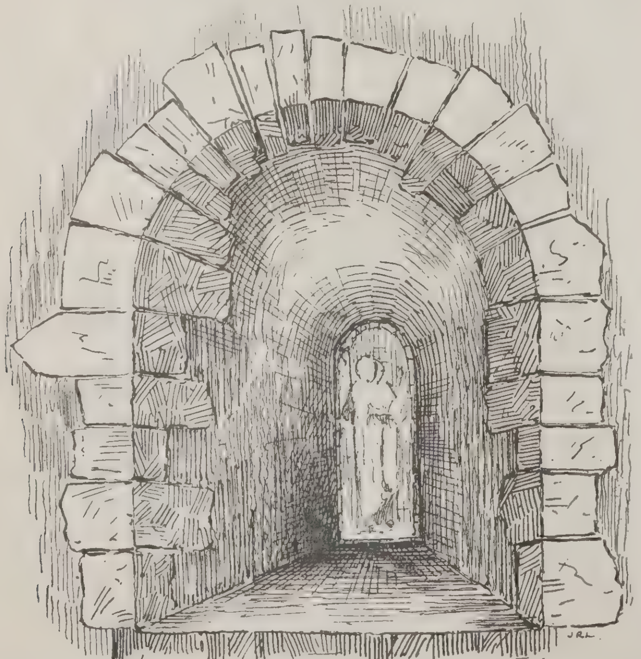

FIG. 8.—NORMAN LIGHT IN NORTH AISLE, HAMBLEDON CHURCH.

Views and Reviews.

Spon's Price-Book.

This excellent book of memoranda and prices is always welcome, and the new issue (with which the book enters upon the thirtieth year of its existence) maintains the standard of former editions. It would be difficult to call attention to all the little additions and revisions which are constantly needed in a work of this sort in order to keep it up-to-date. There are, however, several features which may be noted, such as the rules for electric wiring issued by the Institution of Electrical Engineers, the Workmen's Compensation Act, and the revised R.I.B.A. schedule of architects' charges.

"Spon's Architects' and Builders' Price-Book: 1903." By W. Young. Edited by Clyde Young, A.R.I B.A. Price 3s. 6d. London: E. & F. N. Spon, Ltd., 125, Strand, W.C.

A new Method of Perspective.

On p. 401 of our issue for January 28th last we gave particulars of this new method of preparing drawings in perspective, in reviewing the published small-scale diagrams, and then had occasion to announce that Mr. B. T. Batsford would publish large diagrams for office use. These have now made their appearance and are excellently prepared, so that they should be of the greatest service to many architects. They are in half-imperial size and are drawn to ½in. scale; thus each height space represents 6in. and each width a foot. The diagrams are printed on transparent paper, to allow them to be reversed if desired. It may occur to many that an objection to their use is that thick drawing papers when laid over them will obscure the diagrams, but this can be overcome by placing the paper and diagram over a sheet of glass tilted at an angle, when the lines can be observed through the thickest drawing paper. We are glad to learn that this publication is proving a great success.

R.'s Method: Perspective at Sight: Diagrams for Half-Imperial Perspectives. London: B. T. Batsford, 94, High Holborn, W.C. Price, 7s. nett.

Hertfordshire.

The chief difficulty of the author of this little volume was to compress all he had to say—and "scrappiness" is the result. Still, he has given us what may be called a concise synopsis of Hertfordshire. There are many architectural references, and to illustrate the author's taste in these matters we quote what he says when speaking of the Hall at Panshanger: "Panshanger is not a 'correct' structure from an architectural standpoint; the writer of Murray's Handbook describes it well as a 'stucco-fronted, semi-castellated Gothic mansion of the Walpole-Wyatt type.' Most ramblers, however, are not architects, and the mansion and its surroundings are, as a whole, as picturesque as they can well be." Of New Barnet he says: "The whole of the district is excellent ground for the student of modern domestic architecture, the examples of diverse schools and styles being endless." In the chapter on Antiquities a complete list of the old churches of the county is included (classified according to their respective styles), fuller details of each being given in the chapters relating to their special districts. The history and description of St. Albans Abbey is written in a free and unbiased manner, and in his remarks on the restoration the author is careful to avoid any expression of opinion as to its merits or otherwise. Hatfield House, Knebworth Hall, Moor Park (Rickmansworth), St. Peter's Church (St. Albans), Berkhampstead Church and Waltham Cross are among the more important structures which are accorded special notice. A passing mention is made of the Great Northern Viaduct at Welwyn; (one of the finest in the country); but in the list of modern churches at Watford no mention is made of the Church of the Holy Rood, and but a line is given to Beechen Grove Chapel. The description of Berkhampstead contains no reference to Egerton House, a decided omission, and there is but a meagre paragraph about Ashridge House. Otherwise the many country residences, famous old inns and houses with which Hertfordshire abounds are duly noticed. Besides the ordinary map, a very clear and accurate sketch map is given. Mr. New's illustrations are not remarkable; he has done better work than this.

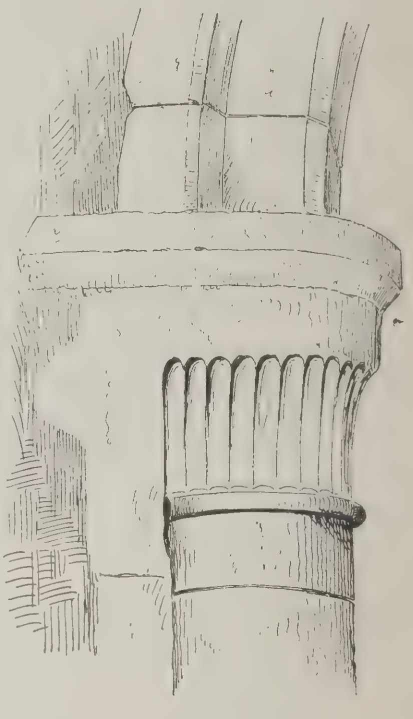

FIG. 6—WEST RESPOND OF SOUTH ARCADE.

"Hertfordshire," by Herbert W. Tompkins, F.R.H.S. with illustrations by Edmund H. New. London: Methuen & Co, 36, Essex Street, Strand, W.C. Price, cloth 3s., leather 3s. 6d.

Timbers.

This is a very useful book by an authority on the subject of timber. It first speaks of wood in general, dealing with its origin and structure, with short chapters on the classification of woods, defects, selection, seasoning, &c. The remainder of the book, more than half and by far the most useful, is devoted to short descriptions of the woods of commerce, particularizing their sources, characteristics and uses. We regret that the preliminary chapter is so concentrated and involved, and the sentences often so ambiguous as to be most wearisome to read. There is no necessity for this; and the author would do well to remedy the defect in a second edition.

"Wood: A manual of the Natural History and Industrial Applications of the Timbers of Commerce," by G. S. Boulger, F.L.S., F.G.S., F.R.S., F.R.H.S., A.S.I., Professor of Botany in the City of London College. London: Edward Arnold, 37, Bedford Street, Strand W.C. Price 7s. 6d. nett.

ARCHITECTURE AT THE ROYAL ACADEMY.

OF the 250 exhibits in the Architectural Room at the Royal Academy practically one-half are of domestic work, and there is cause for congratulation that this work is so satisfactory. Even among the smallest houses, done in some cases by quite young men, one sees a soberness which is altogether acceptable after the rinsings of the Gothic Revival—houses that would weather well and be comfortable to live in: while the large exhibits include mansions where the abundance of money has not resulted in a gorge of ornament but in a classic richness and solidity. The additions which have been made to Cornbury Park, Oxfordshire, by Mr. John Belcher are in admirable taste. The work is very refined in feeling, and is worthy to be considered as among the best of Mr. Belcher's many mansions. The drawings themselves are excellent. Let the carefully-drawn elevation (No. 1455) be compared, for instance, with the pencil perspective of Dalham Hall below, by Messrs. Mallows & Grocock: even allowing that the latter is drawn hurriedly, one can see it was done for effect—with the result that we are quite unable to get an exact impression of the window treatment and other details. Another of Mr. Belcher's exhibits (No. 1448) shows his remodelling of Tapeley Park, Instow, North Devon. Here again we might trace its origin were there no name on it. The house is of the English Renaissance type, rather of the Georgian period, of red brick with lighter brick arches over some of the windows and stone pilasters—those on the south front and the columns over the portico seem rather slight, but the house is a fine piece of work as a whole.

Burton Hall, in Cheshire, is another large country mansion of which Messrs. Nicholson and Corlette are the architects: the design is strong but the drawing (No. 1530) is too splotchy to be able to see all the parts as one should.

Crathorne Hall, Yarm-on-Tees, is a well-designed house by Messrs. Ernest George & Yeates, the drawing (No. 1444) washed over with sepia in their characteristic manner. The house has a big hall on the terrace front with a large dining- and morning-room on either side, a corridor behind running the whole length of the house and leading at one end to the servants' quarters, which are ranged around an inner courtyard. The elevations are very pleasing.

Mr. E. Guy Dawber exhibits three drawings, all good specimens of penmanship. Two (Nos. 1647 and 1657) are respectively of the garden and entrance fronts to Nether Swell Manor, Gloucestershire, a county where he has already done so much work; while the third (No. 1637) is of Juniper Hill, Surrey (to be reproduced in our centre plates next week). All three are well treated.

The entrance front to the house at Winchfield (No. 1648) is much the same in treatment as the garden front exhibited by Mr. Ernest Newton last year, and which was reproduced in our issue for August 27th, 1902—anyone who has seen Mr. Newton's houses as built will especially appreciate the drawings of them which he exhibits.

The music-room at Hatchlands, Guildford, by Mr. Reginald Blomfield (No. 1652) is one of the best exhibits among the domestic work in the room. The carving is very rich and the treatment altogether in that style of English Renaissance which Mr. Blomfield so boldly practises.

Thorpe Underwood Hall, Yorks, is shown by an effective drawing by Mr. Griggs (No. 1477). The house itself, designed by Mr. Walter H. Brierley, is well planned and the elevation pleasing.

Mr. Leonard Stokes shows the drawing of Littleshaw, Woldingham, reproduced in our issue for August 13th, 1902; Mr. William Flockhart a sketch of the hall at Park Wood, Henley-on-Thames (No. 1535), in the English baronial manner, with large hood over the fireplace and exposed ceiling timbers; and Mr. Clyde Young the entrance-hall to Elveden (No. 1593), a fine domed ceiling, with semicircular lunettes, supported on dark-green marble columns.

Cripland Court, Sussex, by Messrs. T. H. Mawson and P. Morley Horder (No. 1492), was illustrated in our issue for July 9th, 1902; the pond garden at Biddenham, by Messrs. Mallows and Grocock (No. 1474), in our issue for February 19th, 1902; the garden house and pergola at Walmer Lodge, Kent, by Mr. Thomas H. Mawson (No. 1570), in our issue for October 8th, 1902; the house at Lee-on-the-Solent, by Mr H. L. Fedden (No. 1596), in our issue for November 19th, 1902; and the drawing-room at Birkby Lodge, Huddersfield, by Mr. Edgar Wood (No. 1508), in our issue for May 21st, 1902.

Mr. Alfred H. Hart exhibits two drawings (Nos. 1493 & 1520) of a house on the Hadley Road, very picturesque on the garden front. Maesycrugian Manor, in Carmarthenshire, by Mr. Arnold Mitchell (No. 1490), has a great squat tower that bulks very heavily; and the same preponderance of a tower is to be found in the proposed house near Witley by Mr. Seth-Smith (No. 1576)—for the rest this latter house is in good proportion.

Mr. George O. Scorer's sketch for a house on the Isle of Wight (No. 1509) deserves mention as a specially pleasing design, and the same may be said of the two houses at Buckhurst Hill by Mr. A. Needham Wilson (No. 1557). Witham Hall, Lincolnshire, by Mr. A. N. Prentice (No. 1496), is another good design, though not so admirable as some of Mr. Prentice's other houses.

Among other domestic work we noticed some houses by Messrs. Cooper & Davis, more especially the house at Scarborough (No. 1567), a pleasing design with four round bays on the garden front—the drawings themselves most strangely coloured, even allowing for the setting sun which we assume to be in the neighbourhood; "The White Cottage," Sunningdale, by Mr. Campbell Jones (No. 1624); a house at Beckenham by Mr. Henry Tanner, junr. (No. 1630); a charming lodge at Enfield by Mr. Sidney W. Cranfield (No. 1631), far better than his cottage at Gough Park (No. 1638); a small house and garden at Windermere by Mr. Thomas H. Mawson (No. 1473), in his characteristic manner with a pergola walk at one side; a house at Farnham by Messrs. Niven, Wigglesworth & Falkner (No. 1482), with strange and fearful clouds in the sky; a sturdy design for a house at Cudham by Mr. William J. Davies (No. 1513); a country house by Mr. H. Lowry Corry (No. 1517); Holiday Cottage, Ditchling, by Messrs. F. H. Greenaway and J. E. Newberry (No. 1588); a house at Warlingham by Mr. William H. Harrison (No. 1608); stabling and fives-court at Ilkley by Mr. E. Brantwood Muff (No. 1642); and a cowhouse and farm at Shenley by Mr. C. J. Harold Cooper (No. 1676).

We noticed, too, among the interiors several "Arts and Crafts" designs, more particularly two of staircases by Mr. Shiner (Nos. 1533 and 1544); a dining-room by Mr. Ellwood (No. 1512), with something very strange over the fireplace; a dining-hall by Mr. Alec. D. Clark (No. 1595); two very pleasing inlaid fireplaces by Mr. Thomas Johnson (Nos. 1483 and 1498); and quite an "Art Nouveau" design for a drawing-room by Mr. Davit Whittet (No. 1541), with a huge pattern on the wall and immense firedogs.

Coming now to public and semi-public work, we see several drawings of very large buildings. First there is Mr. John Belcher's design (and also a model) for the Royal London Friendly Society's new offices on Finsbury Square (No. 1452), illustrated in our centre plates this week—a design which masses up well. Mr. Aston Webb shows a large drawing of the completion of the Victoria and Albert Museum at South Kensington (No. 1489), a well-arranged plan and carefully-treated elevation, though we do not think the central tower is altogether successful. Mr. Webb also exhibits a finely-drawn detail of one bay of the Royal College of Science at South Kensington (No. 1463).

A very remarkable design for the proposed new Government offices at Johannesburg is shown by Mr. Halsey Ricardo (No. 1453), consisting of a series of semi-circular arches springing from stout columns on the ground floor and carrying two storeys of projecting verandahs, which, as there is no balustrade, are presumably introduced to give shade only.

Messrs. Briggs, Wolstenholme, Hobbs & Thornley show an interior and exterior (Nos. 1686 and 1449) of the proposed Bluecoat Hospital Chapel at Liverpool, a sober design, though not striking; Mr. Henry T. Hare shows his design for new municipal buildings at Crewe (No. 1447), a building very characteristic of his methods, and also the Harrogate Municipal Buildings (No. 1499); and Mr. Edwin T. Hall a powerful design for a war memorial library at Dulwich College (No. 1545). Another war memorial to Old Cliftonians, by Mr. William L. Lucas (No. 1446), has a figure of Pallas very reminiscent of that by Sansovino on the now demolished portico to St. Mark's Campanile.

A fine perspective of the interior of the new Sessions House in Old Bailey is exhibited by Mr. Mountford (No. 1645).

Several competition designs are hung, such as those by Messrs. Lanchester, Stewart & Rickards for South Shields Town Hall and Deptford Town Hall (the latter was reproduced in our issue for October 22nd, 1902).

Of the scholastic buildings there are notably Mr. T. G. Jackson's design for new buildings at Hertford College, Oxford (No. 1640); King's Lynn Grammar School, by Mr. Basil Champneys (No. 1655); Board schools at Brighton, by Mr. John W. Simpson (No. 1667); and St. Felix Schools, Southwold, by Mr. Arnold Mitchell (No. 1459). Mr. H. Percy Adams exhibits a fine design for the Tunbridge Wells General Hospital (No. 1684).

Several good city business premises and blocks of flats are shown, as well as a coloured drawing of Prof. Beresford Pite's Pagani Restaurant (No. 1451), which is a daring design particularly successful above the ground floor. But, besides the domestic work and the few large public buildings mentioned, it is the church designs which merit special attention. Here we find quite a collection of Liverpool Cathedral drawings. Mr. Corlette shows two (Nos. 1670 and 1672), respectively an exterior and interior. The design, however, can only be considered moderate. Mr. Skipworth's design (Nos. 1677 and 1680) is remarkable; it has many good points, but we fear there is too much of the "individualistic" touch in it to be altogether successful. Prof. Beresford Pite's is a masterful design, far finer than Mr. Leonard Stokes's.

Mr. Charles H. Reilly exhibits two effective drawings (No. 1464 and 1507) of a cathedral. Mr. Bodley shows St. Mary's, Clumber, a diploma work deposited on his election as Academician (illustrated in our issue for April 22nd last); Mr. William H. Bidlake his fine Latimer Memorial Church at Birmingham (No. 1479), admirable in proportion; and Mr. C. Harrison Townsend a drawing of the beautiful pulpit he has designed for Bristol Cathedral, one of the best designs he has ever made.

Taken as a whole, the architectural room at the Academy this year is very creditable. But we should like to see a greater number of carefully-drawn elevations (such as Mr. Belcher's and Mr. Aston Webb's) and fewer perspectives; and—photographs, though the hope seems vain.

THE ARCHITECTURAL ASSOCIATION.

ARCHITECTURE AND THE PUBLIC.

A MEETING of the Architectural Association was held on Friday evening last, Mr. Henry T. Hare, F.R.I.B.A., presiding. The following were elected members:—Messrs. Robert Haensler, C. R. B. Murphy, J. P. White and George Hornblower. Mr. A. Needham Wilson then read a paper on "Architecture and the Public," of which the following is a summary:—

We have passed through many stirring influences. We underwent the ordeal of the æsthetic era in emerging from the Victorian—we had a severe attack of the "Queen Anne"—and recently we have suffered more or less from a strange disease known as the "New Art," from which we are scarcely convalescent. We have fortified our constitutions with the school of Norman Shaw. We have trembled in the throes of the Gothic revival and the influences of the Oxford Movement, and we have seen as the outcome a new and, I venture to think, a sturdy development of ecclesiastical architecture. And a greater appreciation of the Renaissance stock has encouraged the grafting of some vigorous shoots on that fine old tree.

Is it too picturesque or overdrawn to imagine English architecture as a giant awaked from sleep, and ready and anxious to battle successfully under the new conditions amidst which he finds himself; still stretching his powerful limbs and yawning a little?

If it be granted that we are living in a transitional age, and that the old order of things has passed away; that as a nation we are awaking to the knowledge that we can no longer plod along in our old stubborn way but must bestir ourselves, unless we would be left behind and unheeded in life's race, are we architects fully alive to the fact?

New inventions, new ideas, new demands, new conditions, new uses for materials, crowd upon us and increase daily. We have a differently constituted public to cater for, with an education which makes them infinitely more difficult to please than formerly, and yet have we succeeded in awakening generally a greater appreciation of the beautiful in art as far as we are concerned? Have we succeeded in more than meeting the demands of sanitary and constructional enlightenment? Are we leading or being led? Is architecture to-day an educational force calculated to elevate and teach and brighten the existence of the masses, or to relieve the dull grind and monotony of the great middle classes or the sordid and deadly dull existence of the workers? Are we as fully equipped for this position as we ought to be, or even alive to the necessity, or is it all the idle Utopian idea of the dreamer, and shall we meet it with the reply that it cannot be done at 5 per cent.?

Further, has the status of the architect at all improved, or is he still considered a visionary, an unpleasant necessity, or an unmitigated nuisance, whose services may be dispensed with if possible? Can he command, any more than before, the tribute to brains and genius ungrudgingly given to the successful painter or sculptor, or can he appeal to the popular imagination with the expression of those brains and genius as can the engineer? Have we an appreciative public—one that can recognize genius when it exists?

It can scarcely be claimed that we are artistic as a nation. Art with us is not spontaneously produced, it is rather the result of force effort; it is not the natural outcome of inherent liking—which will evolve art unconsciously without knowing that it is art. As a nation we do not produce art unconsciously, and as a nation we are not aware of the fact.

Yet I think even I can detect a growing appreciation of art, for art's sake, as expressed by the painter, the sculptor, and the craftsman, an appreciation that is gradually spreading, and even now with the public is supplanting what I may term the oleographic epoch. I hope I can detect signs of an appreciation of better things in domestic decoration, furniture and ornaments. Is it too optimistic to trust that the era of hideous flowered wallpapers, marble mantelpieces, grained woodwork, ugly mahogany, glass lustres, dyed grasses and wood mats, and their deadly dull atmosphere of sordid respectability is giving way to a craving for something better? The dull monotony of the struggle for existence is leading to a yearning for that which will brighten the grey and leaden hue of the lives of the great mass of the people. But we have not as yet succeeded in abolishing the deadly dreariness of the interminable streets of "villas"—long, wearisome vistas of endless monotony—the drab of which must be reflected in the lives of the unfortunates who dwell therein. Yet even the speculative builder caters for tenants with some approach to what he fondly imagines is art, finding that the "half-timber" is worth an additional £5 on the rent. Shall we see the day when these interminable rows of dwellings, ground out of the speculative builders' mill, will give place to cheery and well-designed groups of houses facing their common green quadrangle?

Well, I venture to assert, not until we architects have a hand in the matter. Not until we have succeeded in moulding the popular mind into a far greater appreciation of the beautiful as expressed in architecture; not until we have suppressed the prejudices against us, and created such a demand that it will be as natural to employ an architect as it is now for the builder to draw himself one set of plans for a hundred houses.

I venture to think that as architects we hardly grasp the importance of the influence of our work upon the social well-being of the people. Do we not design too much for ourselves and our self-gratification? I suggest that we count too much upon the solid insular reserve of the Briton, and too little upon the emotional side, which it is our national characteristic to repress. However dull, however hardened a man may be, surely he must be unconsciously influenced by his environments; and may I suggest in this we have a means of educating our fellow men to a fuller and healthy appreciation of our work.

Do we not see on every hand awakening knowledge and keener interest in our work? If only it all can be turned in the right direction, I venture to prophesy that no registration of architects will be necessary to protect the public against incompetent or unqualified men, but that the public will no more employ such men than they would an incompetent or unqualified lawyer.

Why, even the Press—not a bad barometer, by the way—has been reflecting the movement, and, when reporting upon the opening of a new building, has even illustrated it occasionally, and actually in some instances mentioned the name of the obscure individual who has conceived it and carried the work of his brain into concrete form.

We are perhaps too ready to dwell on our grievances against the public—sometimes real, sometimes imaginary—and into these I do not, as I said, propose to enter. But what I would ask is, Have the public any legitimate grievances against us?

The many-sided character of the profession shows no tendency to diminish, but rather to increase, and the exigencies of a modern architect's practice call for a dozen experts merged into one. He never knows what the scope of that practice may demand: anything between the designing of an altar cloth or chalice veil to the settling of some intricate legal difficulty or the cure of a smoky chimney. He must be a sanitary specialist, a ventilation specialist and a constructional specialist; capable of supervising or arranging the installation of electric power or light, acetylene gas, heating apparatus or laundry machinery, lifts or cooking plant.

He must be *au courant* with the latest fad; must advise on all forms of decoration; be an artist in colour schemes; understand the stoking of a kitchen range, or laying-out a garden. He must have an all-embracing knowledge of the nature and properties of materials; and, if we are to judge by the advertisements for assistants in the professional journals, must be a quantity surveyor as well. Small wonder if, in his anxiety to find scope for a little design, and comply with the innumerable by-laws, Building Acts, and vexatious regulations, he occasionally puts drawing-room handles on a classroom door, passes Swedish timber as Russian, or omits to specify a stick for the scullery copper. I am not quite sure that we are alive to the full demands of the age, or that we are taking steps to keep ourselves fully abreast of it, or that not only ourselves, but those who will take up our pencils in the time to come, are efficiently equipped for the modern architect's career. I do not think as yet we fully recognize the changed conditions under which we practise, and unless we do some foundation will continue to exist for the charges levelled against us.

Are we ahead, not abreast, of the demand for technical education in these days? Are we conversant with the recent scientific discoveries? Are we making proper use of new inventions and applications of materials? Are we taking the measures we should to minimize fire risks? I do not know that we are.

Hedged about as we are with difficulties, hampered at every turn, we can neither experiment on our clients nor at their expense. Our opportunities of testing materials are limited, and we fear to attempt new departures lest they prove failures and bring down upon us the wrath of our clients. No wonder we are dubbed old-fashioned and accused of lagging behind the age.

Perhaps, too, in time our employers will come to realize that the scale of remuneration is not always such that it should command the services of many experts in the person of one man, who, if he is to earn a decent livelihood, must so overburden himself that he cannot give the attention he would wish to minute details.

It is coming to this, that with the multifarious requirements now demanded of the architect life will be too short to cram into it the requisite amount of study, and we shall have to specialize more and more. It may be that our system of training is too general and too superficial, and the problem will be to develop the particular bent, to encourage the special talent of the young beginner. I am not sure, myself, that our present system of training is by any means perfect. I think far too much time is spent over "the orders," to the detriment of more important subjects.

A discussion followed in which Lord Windsor, Messrs. Francis Hooper, John Murray, W. A. Pite, W. W. Gwyther, R. H. Weymouth, Munby and Henry T. Hare took part.

The report of the scrutineers as to the annual election of officers was then read. The list is as follows:—President, Mr. Henry T. Hare; vice-presidents, Messrs. R. S. Balfour and Arnold Mitchell; committee, Messrs. W. A. Pite, Louis Ambler, A. N. Prentice, E. Guy Dawber, W. Howard Seth-Smith, E. L. Lutyens, John Murray, J. S. Gibson, F. D. Clapham and R. H. Weymouth; hon. treasurer, Mr. Francis Hooper; hon. librarian, Mr. J. MacLaren Ross; hon secretaries, Messrs. H. P. G. Maule and Henry Tanner, junior.

THE EFFECT OF DESIGN ON CONSTRUCTION.*

From a Contractor's Point of View.

By R. W. NEWMAN, A.M.I.C.E.

WHEN speaking of design we are apt to think of drawings only, whereas the specification, the quantities, and more especially the instructions of the engineer as the work proceeds, govern to a very great extent the methods which the contractor has to adopt in carrying out the work in the most economical manner. While the drawings show the work as it will appear when completed, and the specification gives in somewhat general terms the methods which will have to be adopted in constructing the works, these may as the work proceeds be modified almost out of recognition by variations made and covered by clauses in the specification which give the engineer power to vary, increase or decrease while adhering to the prices tendered. From this cause arise difficulties, delays, &c., ending often in claims which create friction and annoyance, for which the contractor cannot justly be held responsible.

It is frequently a matter for comment that the prices tendered for work vary so much—there being often a difference of as much as 50 per cent., but it must be borne in mind that the same difference may exist in the estimated cost of the designs of different engineers when they are designing schemes whose ultimate object is the same.

I propose to show how, by various small differences in design, the cost of construction may vary over a very wide range.

Nothing is more misleading to those who have not had experience of pricing work than to refer to one of the excellent handbooks on contractor's prices, and to see there the price of—say concrete—given at a figure which takes no account of the quantity to be dealt with, the locality, the nature of the materials of which it has to be made, the proximity or otherwise of the necessary materials, and also, in the case of large works, of the supply of suitable labour.

I believe that the popular impression is that a contractor, having obtained a contract, designs the plant necessary to execute the works in the most economical manner. However correct this impression may be in the case of works extending over many years, it is decidedly not so in the majority of contracts, for unless it is certain that the special plant will effect sufficient saving to ensure its initial cost being refunded with interest during the particular contract for which it is made, it is better to use types which can be adapted to various classes of work, as in this way only can the cost of the plant be spread over more than one contract; otherwise the contractor may find on the completion of a particular contract that he has on his hands machinery for which he has paid a large sum and for which he has no further use.

Herein lies the advantage to a contractor in having an accurate bill of quantities, *i.e.*, one in which the quantities are entered as the actual quantities which the work will take if carried out to the drawings, and if the drawings are based on the fullest possible information which could be obtained before tenders were invited. As the reverse of such a bill, we may have one which has been drawn up so that the quantities, when priced out, may cover any possible contingencies which may arise, so that in any event the total amount of the tender may cover the final cost of the work when the contract has been completed.

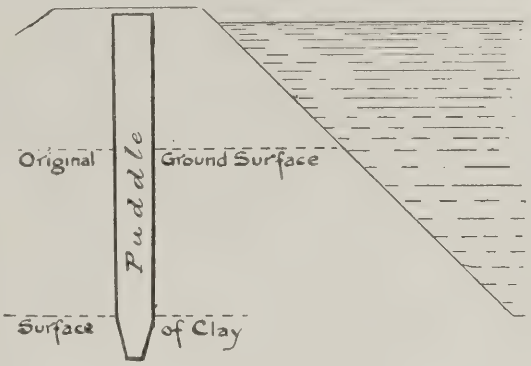

FIG. 1.

To illustrate a disadvantage a contractor may suffer from, suppose that a contract includes some heavy foundations estimated at, say, 10,000 cub. yds. of excavation and concrete. This quantity will justify the contractor in getting sufficient plant on the ground to deal with it in the time specified; but suppose that after the work has been some time in progress the engineer decides that he can get a good foundation with half the depth of excavation and consequently, say, half the concrete. Had the contractor known that the bill of quantities had been drawn to cover any contingency which might arise, such that the foundation might be good enough at the shallower depth, he would have hesitated before obtaining so much plant and sought more definite information to act upon.

The reverse conditions apply, still to the detriment of the contractor, when, say, some foundations have to be filled with concrete, the amount given in the quantities being, say, 5,000 cub. yds. and proving to be 10,000. If the price of materials has gone up in the interval between the contract being let and the increase in the quantities, the contractor may have to pay away the profit to which he is entitled in buying the additional materials at a higher price, without being able to obtain an equivalent increase in the price per cub. yd. in his original tender.

I have dwelt on this point at some length, because it shows how desirable and fair to the contractor it is that the engineer should have at his disposal the very fullest information before the quantities are drawn up, and that his quantity bill should be based on these data.

As a simple illustration of the effect of design on the methods of construction, we may imagine the construction of a large reservoir the excavation from which is composed of the following, in order from the ground surface:—Turf, 6in.; soil and loamy material, 1ft. 6in.; gravel, 8ft. 6in.; clay, 10ft.

Supposing the excavation is to be used to form the banks (Fig. 1), and that while sufficient clay and gravel have to be obtained to make the puddle wall and concrete the engineer has specified that the various strata above mentioned may be mixed to form these banks. The probability is that the contractor would put in a steam navvy, get to the level of the bottom of the reservoir without delay, and excavate as much as possible in one face. But, on the other hand, suppose that the engineer specifies that the turf must be tipped to spoil, and the soil and loamy material must be used only for soiling the banks of the reservoir when finished; that the gravel must be the only material used in forming the banks; and that all clay beyond that required for the puddle wall must be tipped on the site selected for further contemplated work. The contractor might then consider it would be cheaper to excavate the various strata by hand labour. It will at once be appreciated that even the simple operation of moving earth, as also the question of cost, will be influenced by the design of the works as covered by the specification, though the difference may not be apparent by looking at the drawings.

One of the largest unknown quantities in all contracts must of necessity be that of "dealing with water" found in the excavations, and it is one of those questions which is left to the contractor to estimate for and deal with, subject to the usual restrictions that the methods adopted must be to the satisfaction of the engineer. This is always a difficult matter, and one which does not admit of the same general treatment; each case must be considered on its merits, bearing in mind the local conditions, namely, strata passed through, liability of site to floods, the depth from which the water has to be drawn, the proximity of the nearest watercourse to which the water can be discharged, &c. Speaking generally, it will be found to a contractor's advantage to provide a reasonable excess of pumping power to meet sudden emergencies; to sink sumps clear of the work to be drained, not in part of the excavation in which the permanent work has to be placed, and also to make as free use as possible of sub-pipes. A judicious initial outlay on a system of temporary drainage is often as much in the interests of good sound work as it is an important factor in the economy of construction.

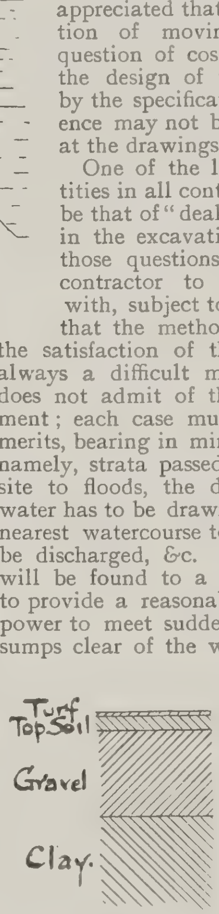

FIG. 2.—TYPICAL SECTION OF GROUND.

Figs. 3, 4 and 5 illustrate a typical section of a wall of, say, a gasholder tank, which would probably be rendered on its internal face so as to retain water within the tank. Fig. 3 shows puddled clay put behind the wall, which will in a great degree give the desired result, and no difficulty should be experienced in applying the rendering. In Fig. 4 is shown a sump sunk independently of the main excavation, and a series of agricultural pipes laid round the tank to carry off the subsoil water as readily as possible to the sump, from which it is removed by a temporary pumping plant. Imagine for a moment that the pump is not in use; the water rises in the subsoil and finds its way through the brick or concrete wall—not in large quantities, but sufficiently to keep the face of the wall damp. Try as you will, the cement rendering will not adhere; but keep the water down and the rendering will adhere without difficulty, and having once set the pump may be stopped and the gasholder tank will be watertight. As an additional precaution it may be well

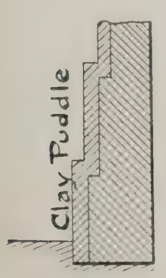

FIG. 3.
Wall backed with puddle.

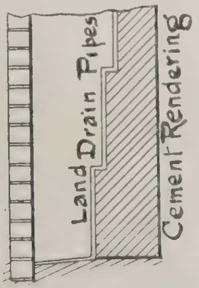

FIG. 4.
Wall with sump sunk independently.

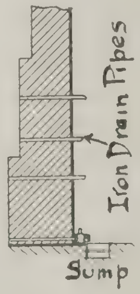

FIG. 5.
Sump formed inside permanent work.

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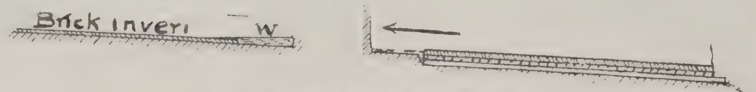
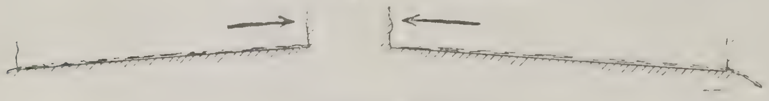
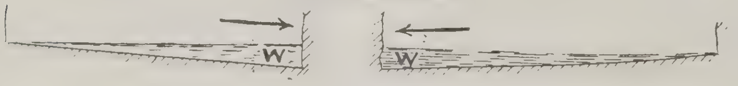
* A paper read before the Junior Institution of Engineers on April 24th, 1903.



(a) One Falling and One Rising Face.



(b) Both Faces Rising.



(c) Both Faces Falling.

FIG. 8.—SHOWING THE ADVANTAGE OF DRIVING A TUNNEL ON A RISING GRADIENT.

to fill the tank at the same time to balance the pressure within and without, and thus not put any undue strain on the rendering until the work has had some time to set properly. Fig. 5 shows a less expensive method of dealing with the water, by putting a series of iron pipes through the wall at various points to let the water at the back of the wall have a free vent. The water is then pumped up from a sump inside the tank, and after the rendering is completed the cocks on the pipes may be closed, or the pipes may be so constructed that they can be unscrewed and plugs inserted, the rendering being afterwards made good at those places.

In passing through a water-bearing into an impervious strata, it is often advisable at the top of an impervious strata to form what is known as a garland, as shown in Figs. 6 and 7. The water in the water-bearing strata falls into this, and is led off into the sump, thus reducing the depth from which the water has to be pumped; the water to be pumped from the bottom of an excavation being only that due to dropping from the garland or other minor cause. The great advantage of a garland is that all excavation in the impervious strata is carried on in the dry at consequently less cost and with greater comfort to the men.

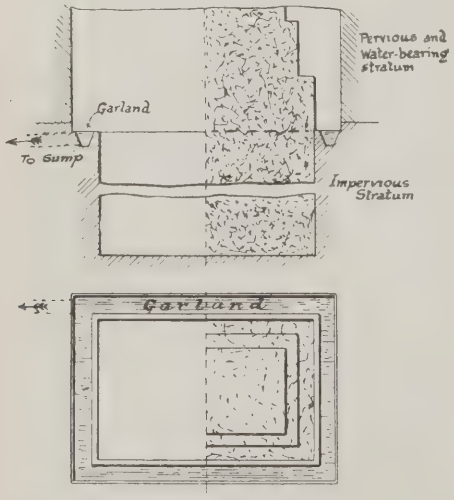


FIG. 6.—HALF-PLAN. FIG. 7.—HALF-PLAN OF CONCRETE.

Sub-pipes, which are only pipes laid for the purpose of temporary drainage below the level of the work under construction and which are left in place permanently, are not only a great advantage to a contractor but go far to ensure better work, because it can be built under drier conditions. These pipes are usually omitted from the design, and I have frequently been surprised to note how often engineers hesitate to sanction their use. Fig. 8 shows diagramatically the driving and lining of a tunnel in which a sub-pipe is used, and the effect when such a simple precaution is not adopted, necessitating, in addition to the cost of pumping, the whole of the water being pumped over the finished invert, which, despite all precautions, must suffer in consequence: (b) and (c) show respectively the advantage of driving a tunnel in an uphill direction and the disadvantage of driving it on a falling gradient, when the water **W** backs up in the face and necessitates continual moving forward of the pumps, which, in the case of a rock tunnel, have to be altogether removed or protected whenever blasting takes place. Though it is not always possible to design a tunnel so that the highest point is midway in its length, the effect of the design in cases where such an arrangement is possible is a material factor in the method and especially the cost of construction.

Retaining walls, in which class may be included those which support earthworks, either by themselves or in conjunction with an arch, in which case they form side walls to culverts, tunnels, &c., do not at first sight appear to give much opportunity for variation in design or much latitude in their method of construction. These walls, for the purposes of comparison, may be classed into:—(a) vertical, (b) battered, (c) curved, the last form giving the most economical distribution of material for the required purpose. Such walls are generally built wholly of concrete or brickwork, in which case there is little difference in the methods adopted in their construction, except that in concrete walls with curved face the shuttering must be curved.

With brick-faced walls having a concrete backing the conditions are different. Taking first the case of a vertical wall with a 4½in. brick-facing, having heading courses built at intervals, the brick-facing must be carried up to the underside of the first heading course, and after sufficient time has elapsed to allow the work to set properly the concrete is put in behind this, and the brick-facing is again built to the level of the underside of the next heading course, the concrete being again put in behind this, and the cycle of operations repeated until the wall is complete. In Fig. 9 is shown a method of building a concrete wall with 4½in. brick-facing which has none of the previously mentioned disadvantages of limiting the height to which the concrete can be put in to the height of the heading courses shown on the drawing. In this example steel ties **T**, at levels corresponding with a given number of courses of brickwork, are built into the horizontal joints as the work proceeds. The only additional cost thus entailed to a contractor is that he must make the height of the concrete shutters correspond with a defined number of courses of brickwork. It will be noticed that this method does not limit the contractor to any definite height in his lifts of concrete; he can make them to correspond with the levels of the temporal strutting, a very important consideration where the ground is treacherous or heavy.

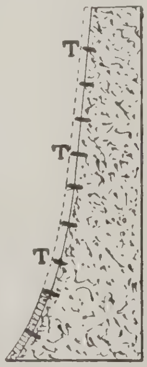


FIG. 9.

(To be concluded.)

CONCRETE AND HOLLOW TILE CONSTRUCTION.

IN the course of a paper read before the recent Convention by the Ontario Association of Architects Mr. Shankland said:—Concrete-floor systems are now being exploited in great variety. Some of the systems have merit, but all of them make too great claims. A concrete slab 3in. or 4in. thick, even if reinforced with steel in some form or other, should not be used in a very much greater span than we now use for steel beams with hollow tile arches between. It has been gravely told me by a concrete sales agent that in case of two 15in. beams, say 7ft. span, it would be perfectly safe not only to deduct the difference in weight of floor between the 3in. concrete slab proposed to be used and the weight of a 15in. hollow-tile arch, but in addition the section could be reduced 25 per cent. on account of the help the concrete gave to the steel. In other cases they state you can, with concrete, use 17ft. to 25ft. spans, and save all the steel thereby taken out. One question, however, they decline to answer. Ask them, instead of telling the vertical load it will support without collapsing, to turn their slab of concrete 3in. or 4in. thick and of 17ft. to 25ft. span, on edge, and then load it. They invariably decline to test it this way. Now, in a twenty- or thirty-storey office building lateral stiffness in the floors is more essential than carrying capacity. A thin slab of concrete laid on top of twelve or fifteen beams cannot by the very nature of things add to the lateral support of these beams. But a 12in. or 15in. hollow-tile arch laid in between the beams does make a stiff floor. Experiments as yet have not demonstrated that concrete floors are fireproof, as compared with hollow tile, which already has been burned. While I have faith in concrete and believe it has great possibilities which will be demonstrated in the future, yet I think that now, in order to compete with hollow tile, its advocates are making claims which cannot be substantiated, and in the future they will have to be more conservative not only in their statements but in their construction in order to succeed. Recent failures in Jackson, Mich., where the falling of the floors pulled down the outside walls, and of four floors which collapsed in an apartment building in Chicago, will undoubtedly prove beneficial in the lessons they teach. Many other failures in concrete-floor construction have occurred in the past few years.

Another Aspect of the Question

Mr. Leopold Mensch, in a paper which he read before the Civil Engineers' Club of Cleveland, said:—

"The universal reign of steel is irrevocably past, and we are returning with rapid strides to the old time-honoured masonry construction. Not to brick- or stonework, but to an artificial stone, *i.e.*, concrete, strengthened by steel. This composite material is variously called concrete-steel, ferro-concrete or armoured concrete. Concrete itself is not a new building material. Vitruvius Pollo, the famous writer on architecture and engineering, who lived in the beginning of our era, describes it as one of the most valuable building materials, and as one which, centuries before his time, had been used for foundations for walls and in all structures where great strength was required. The great dome of the Pantheon in Rome, 142ft. in diameter, was built entirely of concrete, and it stands to-day, having braved the destructive influences of nature for nearly 2,000 years. In the House of the Vestals an upper floor of 20ft. span was a simple slab of concrete 14in. thick. Even in Mexico there are buildings, the remains of an unknown civilisation, which have concrete foundations, and in the Italian colonies of Magna Graecia there is evidence that the ancient Greeks knew what concrete was and how to apply it. The walls of Reading Abbey, in England, were apparently faced with square blocks of stone on both sides, and the core and backing were made of concrete, with the result that although the stone appears to have perished the concrete, which was intended to play a secondary part, still remains."

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Cements.

IRON BRIDGE.—CRICKET writes: "Kindly name a book on cements, explaining their nature, &c. I am anxious to understand what kinds are most suitable for fixing tiles and briquettes to walls, fireplaces and ceilings."

"Lime and Cement," by A. H. Heath (B T. Batsford, 5s.), will serve your purpose. See also "Specification, No. 6."

Sea-Sand Mortar.

ROTHERHAM.—ENQUIRER writes: "I propose to build a brick house on the east coast of Yorkshire. Would you advise the use of sand from the sea-shore for making mortar? Also, could the pebbles be used for concrete to foundation footings?"

Sea-sand makes very good mortar, only it should be washed in fresh water before use, if it is desired not to have the salt effloresce. Sea-worn pebbles do not give that hold or binding power that angular stones do in concrete, but they would be quite satisfactory if used in proportions of about 4 and not more than 5 to 1 of cement, if the latter is good.

Architects Advertising Themselves.

CARDIFF.—SET-SQUARE writes: "I am about to start an architectural practice in a town near here. Would it be advisable to advertize myself in a local daily paper; if so, what form should the advertisement take?"

No self-respecting architect should advertize himself—it is beneath the dignity of the profession, and helps to bring it into disrepute. An architect's first commissions are usually secured through the agency of friends or relations. Success in competitions often leads also to the creation of a practice. But if you are content to go on slowly for a few years, studying your clients' interests to the utmost, and are competent, never fear that you will achieve a position.

Buildings to Measure around Bradford.

BRADFORD.—TWO-FOOT writes: "Kindly name a few buildings within ten miles of Bradford suitable to measure for the R.I.B.A. testimonies of study."

The building most suitable for your purpose, and within the distance of 10 miles, is Kirkstall Abbey, which is of a style transitional between Norman and Gothic. There is a good Early English church at Ilkley. You will, perhaps, find some good work in the parish churches of Bradford and Halifax and in St. Michael's, Dewsbury. You limit yourself to a distance of 10 miles, but it would certainly be worth your while to visit the abbeys of Bolton and Skipton and also the church of the Holy Trinity, Skipton. Bolton Abbey possesses features in all three of the English Gothic styles as well as some Norman work, among which there are some excellent thirteenth-century windows with a Flamboyant tendency. M.

Sale of Practice.

PRACTICE writes: "What are the usual terms for the purchase of an architect or engineer's practice, and for a share in an established practice?"

See answers to enquiries on this subject on p. 12 of our issue for February 19th and p. 232 of our issue for May 28th, 1902.

"Specification": Church Design.

OAKAMOOR.—F. H. writes: "Which numbers of 'Specification' are now in print? Kindly name a book on church architecture giving construction and details."

We can still supply a few copies of all the numbers of "Specification." The price of Nos. 1, 2, 3, 5 and 6 is 5s. nett, and of No. 4 10s. nett. There have been a number of books published on the design of churches, but as they appear to be all out of print you will have to consult them at a library or secure second-hand copies. You can find the titles from the library catalogues. We advise you to consult the works in the R.I.B.A. library, 9, Conduit Street, W., the British Museum or the Birmingham Central Library. There is a very good article on the design of churches and their fittings in "Specification, No. 6," which you should read.

Winchelsea Church.

LONDON, E.—S. J. writes: "Kindly give some particulars of the history of the church of Winchelsea, Sussex."

Winchelsea Church was dedicated to St. Thomas of Canterbury (*i.e.*, Thomas à Beckett) It is Decorated in style, dating from *circa* 1300. All that now remains of it is the chancel, with its two chancel aisles, and fragments of transept. The nave appears never to have been built. In the north aisle are three canopied tombs—a knight in mail, a lady in the dress of Edward III.'s time, and a priest in a robe. In the south aisle there are also two fine canopied tombs. The west end of the latter aisle was altered to form a vestry, some of the tombs being damaged in the alteration. The earliest tomb is that of Gervase Alard, Admiral of the Cinque Ports in 1303 and 1306. The effigy has the legs crossed, the hands clasping a heart, and the feet resting on a lion. At the angles of the canopy are heads, generally considered to be those of Edward I. and Queen Eleanor. The other tomb is thought to be that of Gervase Alard's grandson, Stephen Alard, Admiral of the Cinque Ports in 1324. This aisle was originally the Alard chantry; the sedilia and piscinæ still remain. The church was built at the same time as the town, which is known as New Winchelsea, the old town being almost entirely destroyed by the encroachment of the sea in 1287.

G. A. T. M.

Advertising Board on House.

NIMANEB writes: "My client is the owner of a house which has on one side another building rising a storey higher than my client's. The owner of the higher house has fixed an advertisement board on his gable wall above my client's roof. It is supported by iron hooks, and projects about 6in. from the gable wall. In default of obtaining a letter from the adjoining owner undertaking to pay a peppercorn rental for the board and to remove it when required, my client can, of course, block it by placing another board in front (supported independently) to prevent right accruing; but should he wish to raise his house, the board would actually be in the way of the new walls. Could he then remove it, or cut off so much of it as projects over his building? The adjoining owner seems to have a right to project about 4½in., there being an offset to his wall of that extent?"

It would be best to consult a solicitor and allow him to negotiate. He would probably advise that notice be given that if the board be not removed by a certain date, so much of it as overhangs your client's premises will then be hacked away. Your client would, I believe, be perfectly within his rights in roughly hacking off all that overhangs, including the iron support. When this has been done your client should then erect a board of his own in the way suggested by you, to prevent his neighbour acquiring a prescriptive right to display his advertisement. Probably long before matters have gone so far as this the neighbour will have signed an agreement to rent the right of overhanging and displaying at a small rental, the tenancy to terminate at short notice on either side.

G. A. T. M.

Ordnance Survey.

HESSLE.—J. J. writes, "Is the Ordnance Survey done by the Royal Engineers? How are the situations obtained? Could I, with knowledge of the theodolite, levelling and chain surveying, obtain such a position?"

The Ordnance Survey, though under the control of Royal Engineer officers, is separately organised. Application for employment should be made to the Commanding Officer, Royal Engineers, Ordnance Survey Department, Southampton. M.

Building to Boundary of Property.

NEWCHURCH.—WHITEWELL writes: "The boundary between two plots of land is the centre of a hedge belonging to A. B, the other owner, wishes to build as near to his boundary as possible. A insists that B shall not injure his hedge. What is B's position? The hedge is quickthorn and has been in existence thirty years."

The question is, I think, a little inaccurately stated, because if the hedge belongs to A, it should presumably *all* be upon his land, and how then can the centre of the hedge form the division line of the two properties? How does A trim the outer side of his boundary hedge if he possesses no ditch or land upon which he can stand while he trims—presumably only by B's consent? If the fence overhangs B's land it forms an encroachment, and he may cut off the overhanging portion, though I do not advise so high-handed a proceeding save as a last resort. As the hedge has only been planted thirty years, no doubt the position of the exact boundary line can be determined, and I should advise B (having first made sure of all the facts) to approach A with the suggestion that the hedge should be removed, at B's expense, so far as the wall of the new building will render its existence unnecessary; B then building right up to the boundary line, but of course taking care not so to put in the footings or to overhang the rafters as to form any encroachment on A. If A will not consent to some such arrangement (and presuming it is certain the hedge—and no more—is A's) I advise B to build as near to the quick as he is able to do without injuring it. Probably the hedge will partially die from want of light, but this is no concern of B's. It is better for B to suffer the deprivation of a narrow strip of land than to risk any appeal to an action at law, which would probably cost him more than the value of the land, whether he won or lost. G. S. M.

Wind-Pressure.

PLYMOUTH.—VENTUS writes: "In Major Druitt's report to the Board of Trade concerning the overturning of passenger-train carriages on the Severn Viaduct during a gale on February 27th last it is stated: 'It has been shown by careful measurements at Bidston Observatory that a run of wind of even 70 miles an hour might exert a pressure of 48lbs. per sq. ft.; the average pressure at 80 miles an hour is 60lbs. per sq. ft., and that at 90 miles an hour 71lbs. per sq. ft.' Does this refer to the same pressure indicated in the well known formula p (lbs. per sq. ft.) $= {\cdot}005V^2$ (miles per hour)?"

The whole question of wind-pressure is in a very unsatisfactory condition; very little is really known about it, and there are no ready means of learning more owing to the inherent difficulties of the case. Theoretically the effect of the wind as a moving fluid impinging upon a normal surface will be to give a pressure of $p = 0{\cdot}003\,V^2$, where p = lbs. per sq. ft. and V = miles per hour. Owing, however, to the striking particles having to be deflected, and owing also to suction at the back due to the deflected currents, the pressure may reach a maximum of $p = 0{\cdot}006\,V^2$. The usual limit is considered to be $p = 0{\cdot}005\,V^2$ for a wind blowing with uniform velocity. By careful observation it has been found that an hour's run of an anemometer, while it registers the whole run of the wind in that time, will not give a true average, owing to the wind coming in gusts and spurts. It was considered by the Wind-Pressure Commission that the maximum pressure might be taken as double the mean hourly pressure, making the formula for practical use $p = 0{\cdot}01\,V^2$. Applying this to the figures given, (*a*) 70 miles per hour, $p = 0{\cdot}01 \times 70^2 = 49$lbs. per sq. ft.; (*b*) 80 miles per hour, $0{\cdot}01 \times 80^2 = 64$lbs. per sq. ft.; (*c*) 90 miles per hour, $p = 0{\cdot}01 \times 90^2 = 81$lbs. per sq. ft., so that Major Druitt's figures are based upon some intermediate coefficient, or, more probably, upon a slightly lower power than the square of the velocity. HENRY ADAMS.

Porous Brickwork.

MOFFAT.—J. T. J. writes: "What is the value of water-glass as a preventative and remedy for rain driving through porous brick walls and rendering the room damp?"

I very much question the efficacy of water-glass for the purpose mentioned, as any preparation for coating the exterior of an exposed wall must be quite insoluble in water and proof against the dampness or acidity of the atmosphere; and in this respect I have some doubt as to whether water-glass would be of permanent durability. A solution of $2\frac{1}{2}$lbs. of soft soap, 1 gal. of linseed oil, and 1lb. of rock alum has been recommended, but this requires very careful mixing, preparation by long boiling, and discretion in its application. I do not advise its employment unless by someone who has had experience in its use. I have used the Silicate Paint Co.'s (address Charlton, S.E.) preparation with good effect on many occasions, and hear very good accounts of the Indestructible Paint Co.'s (27, Cannon Street, E.C.) colourless paint. In using these solutions it is necessary to apply several coats, in order that every pore in the brick or stonework may be thoroughly filled. Keep on applying it coat after coat, until it all runs down the face of the wall and can be made to adhere.

G. S. M.

Colouring Copper Green.

LONDON, S.W.—G. A. P. writes: "I wish to treat a copper-covered flèche with some solution which will make it weather green. Can you recommend one?"

There is a dearth of information on the subject, and we have been obliged to make several experiments, with the result that we suggest the following as worthy of adoption. It should be stated in the first place that the green coating of weathered copper is basic carbonate of copper. We have proceeded therefore to endeavour to produce this artificially, with ease and quickness. Make a solution of copper sulphate (blue copperas) in water and brush it on the copper. Allow to dry, and then spray on a solution of ordinary washing soda (sodium carbonate). The latter decomposes the sulphate with the production of green carbonate of copper, which is left as a film on the surface. This is sure to wash off to some extent with showers of rain, but the action, once started, will continue. We advise the spraying-on of the soda solution rather than the use of the brush, as the latter would make it rather smeary. The method may not be new, but we have not seen it suggested before.

R.I.B.A. ANNUAL REPORT.

THE annual report for 1902–03 of the Council of the Royal Institute of British Architects gives the present membership as 1,787, a nett increase of 55 during the year. The Council, with the approval of the L.C.C., has decided to hold the statutory examinations for district and building surveyors only once a year in future—in October. The question of new premises is still postponed till a favourable site is available, but some improvements have been made in the council-room at 9, Conduit Street—the recess behind the chair has been altered according to the design of Mr. J. S. Gibson, and the new system of electric lighting carried out under the direction of Mr. John Slater and Mr. E. T. Hall. The Council has decided to issue an album of photogravures of past-presidents, with spaces for future plates. With regard to the possible effect of the case of *Hobbs* v. *Turner* on the validity of the Institute form of contract, the Council has been advised that there is no need for any alteration. The Ancient Lights Bill, approved by the Council of the Institute and the Council of the Surveyors' Institution, is now in the hands of Mr. J. Fletcher Moulton, K.C., M.P., who will introduce it into Parliament. After some correspondence the Council was informed that the architect and engineer to the L.C.C. would collaborate in the design for the new bridge at Vauxhall. The Council has much pleasure in recording the alliance of the Edinburgh Architectural Association with the Institute. The operation of part of the proviso of by-law 9 lapses on the 18th inst., namely, "Provided always that when the Council of the Institute receive a unanimous recommendation formally submitted by the council of any allied society that a practising member of the profession is eligible and worthy of being elected as a Fellow, the Council shall, during the five years from the date of approval of this provision by the Privy Council, have power to elect him, if in their opinion his work be of sufficient merit." The second clause: "The Council shall also have the power to elect annually to the Fellowship without ballot the president or the president-elect of any of the allied societies who may be eligible and apply for admission," is not subject to the five years' limit.

The Council has been brought to the conclusion that the appointment of assessors in competitions is best left in the hands of the president, and that, even were it desirable, there is little chance of establishing the jury system in this country. A practical result of the deliberations of the select committee of the Council was (1) a revised edition of the "Suggestions for the Conduct of Architectural Competitions" and (2) a confidential set of suggestions for the guidance of assessors. A copy of the former, with a circular letter, was sent during the summer to every town council, urban district council and rural district council in the United Kingdom. The Council expresses itself quite in sympathy with the Competition Reform Society, which reports to the secretary of the Institute any competition matter that may need investigation. The matter being thus placed in the secretary's hands becomes an entirely Institute question, and in furnishing such material for Institute action—material which it would be often impossible to obtain officially—the Competition Reform Society is doing exceedingly useful work. The accounts show a balance of £1,028 15s. on the right side. The Practice Standing Committee published its book on dilapidations during the year. It has under consideration a form of architect's certificate (which it is suggested should be issued in book form) and a form of sub-contract. The Science Standing Committee reports that its proposals for the standard size of bricks have been provisionally agreed to by the representatives of the brickmakers' associations, and only now await ratification by these associations. The Committee hopes that architects and engineers will insert the standard in their specifications and so check the serious differences in the size of bricks that interfere with good sectional bonding.

THE HEATING OF TRURO CATHEDRAL.

THE system adopted for heating the new cathedral at Truro is a combination of warm air and low-pressure hot water. It has been carried out by Mr. John Grundy, of London. The heating chamber, which is situated under the north transept, has been equipped with Mr. Grundy's latest improved type of combined heating apparatus, the furnaces being so arranged as to give the maximum amount of stoking space and fuel storage available. The warm-air ducts and gratings which existed in the older portion of the cathedral have been allowed to remain. The longest of these, which extended to St. Mary's Chapel, being a brick duct 2ft. 6in. wide by 2ft. deep, has now been made to form a double purpose, first as a warm-air duct, and secondly as a trench containing hot-water pipes. St. Mary's Chapel, which is at a different level to and somewhat cut off from the main body of the cathedral, has always been the cold corner, so to speak, and special attention had to be paid to this fact in designing the new scheme. This difficulty has been entirely overcome by the addition of hot-water pipes, fixed along the south wall of the chapel, the mains of which are carried in the existing warm-air duct just mentioned. The introduction of the hot-water pipes has greatly added to the comfort of the worshippers at the daily services. A new warm-air duct has been constructed from the heating chamber under the centre of the nave, and terminating near the west entrance. Branch warm-air flues are taken from this main duct, which is 2ft. 6in. square, the warm-air outlet gratings being placed at intervals between the columns. Where the main duct terminates, and leading into it, a large brick chamber has been formed, 20ft. long by 8ft. wide, containing a battery of gilled hot-water pipes, the total of which represents 450ft. super. of heating surface. Over this chamber warm-air outlet gratings are fixed, fresh air being admitted to the battery by means of two cold-air gratings, which are placed on either side of the porch. By this means the heating of the extreme west end of the cathedral is ensured, the battery being about 150ft. from the heating apparatus. The main duct has again been made to serve the purpose of providing a means of running the hot-water mains, these mains in their turn assisting to warm the air in the duct, thus always ensuring a good current of warm air. Additional fresh cold air has been taken from various sources to the apparatus, and a special automatic humidifying apparatus has been fixed, which agreeably moistens the warm air. The whole of the crypt and vestries throughout are heated by means of hot-water pipes and radiators. Undoubtedly a striking feature of the heating to the casual observer is that the cathedral is found to be thoroughly and equably warmed with scarcely any apparent means to accomplish this object. In no instance does any part of the heating apparatus show above the floor, except the pipes in St. Mary's Chapel.

BUILDING CONSTRUCTION.—IX.

By Our Special Contributor.

(Concluded from p. 14 of No. 419).

In former articles I dealt with the stresses of structures under applied forces, and gave examples of the graphic determination of the stresses in braced girders and trusses. I endeavoured to give a rational treatment, as far as I have gone; that is, I tried to carry the intelligence of the student with me so that at no time was he merely copying a diagram. In this view the stress diagrams of trusses have had reference to trusses not necessarily under vertical loads: the loading was such as might be expected in actual experience, and I hope I have made the mode of finding the stresses fairly clear. If I have succeeded, we have saved the time which would otherwise be spent in first practising with vertical loads, and we may have avoided setting up a habit of blind routine. It is quite common to meet the expression, "theoretically" so-and-so is the case, but "practically" such-and-such must be done. It would perhaps be well if this language could be avoided, but it is the result of experience which deserves notice. In practice we deal with questions of very great complexity, and have to prepare ourselves for these complex questions by considering questions invented to enable us indirectly to more or less clearly see our way to the approximate solutions of practical questions. Suppose we join two iron straps by lapping them and riveting them together with, say, three rivets in a line (chain-riveting). And now suppose we stress the joint. It is generally assumed that each rivet does equal duty, but as a matter of fact any one of the three rivets may be bearing the whole of the applied stress: if the stress is more than one rivet will bear, the rivet yields until another rivet comes into bearing, and if the load is increased the first rivet is further strained and the second rivet is also strained before the third rivet is in bearing (rivets 1, 2 and 3 may be in any order). If the workmanship is good, what is called the "theoretical" condition is approximated to, but if the workmanship is bad rivets Nos. 1 and 2 may with a great stress) be strained beyond elastic limits and the joint will have little more strength than a single rivet would give it. If the student will take a fairly rigid chair and set it on the floor he will find, on trial, that it rests on three legs only; it will rock easily on two legs and so bear on these and either one of the other two. It may be loaded so that by the yielding of the material the chair bears on all four legs, but the student cannot tell accurately the stress in each leg. The trusses we have dealt with are studiously "determinate." It is advisable that we take an "indeterminate" example. In the case of a bridge girder, when the girder is of very great span its weight is great in proportion to the weight of a moving load (say, a railway engine). It may be designed of a simple determinate form, and it may be found that a moving load will not reverse the direction of stress in any position of the load upon the girder. But the case will be different with short spans, and it is often found convenient to use an "indeterminate" form of bracing. There is not much good in the student having shown to him ways of drawing the stresses of fanciful forms of bracing: it will be well for him, if he has fairly comprehended the principles to be made use of, to assume probable loads for such braced structures as he may see in actual work and draw the stresses without coaching. I give two examples. In Fig. 1 the girder shown is loaded with weights 10, 30, 60 and 5. Because the structure is assumed to be "jointed" the stresses on such members as $c\ e$ and $g\ f$ must be equal (so long as the lines which cross are straight lines). This will be admitted as obvious when the bracing crosses at right angles. Suppose it does not cross at right angles (see diagram β). Let the force in A B be s acting at A: this may be resolved into two forces acting at A—$s \cos \theta$, resisted by a force in C A, and $s \sin \theta$ at right angles to C A. It will be seen that an equal and opposite force in D A acting at A may be resolved into two forces acting at A, equal and opposite to the first resolved forces, so that the effect of the line A C is nought. The girder may be taken as two girders which have common top and bottom cords. Consider the girder A B C D (top diagram of Fig. 1). Its reaction at A is $\frac{60}{3}=20$: that of the girder E F G H is $\frac{90}{3}=30$; the stress in $b\ c$ is therefore 30. We are now prepared to draw the stresses at the point A; as we know the directions of four forces at a point, and we know two of the forces, we can determine the other two forces; and it is found that the stress diagram for this girder gives no more difficulty than that of what are called determinate girders.

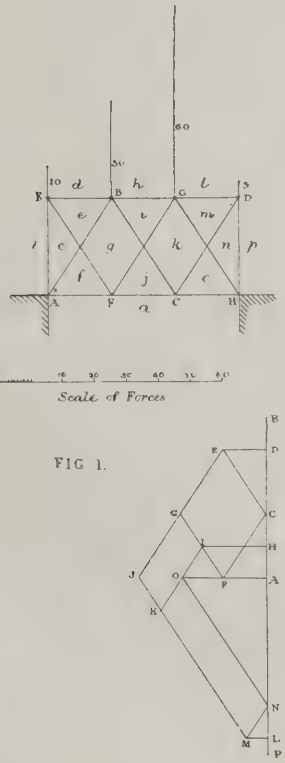
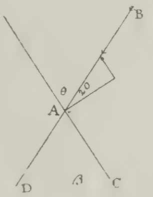


FIG 1.



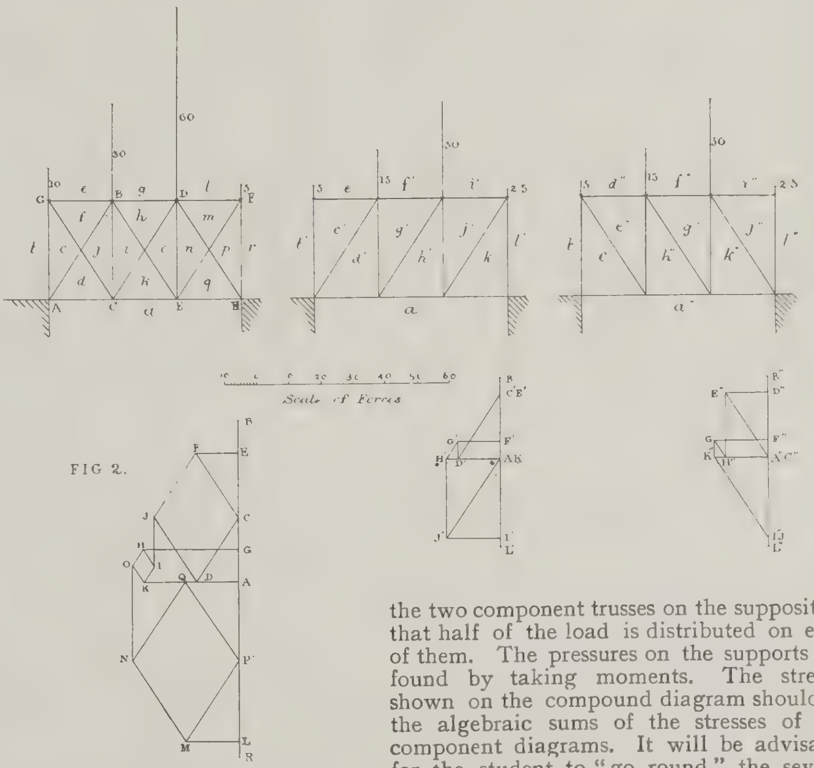


FIG 2.

The example shown by Fig. 2 goes a step further. The two girders here are, first, A B C D E F and, second, G C B E D H. In this example the members G A, B C, D E and F H are common to the two girders, and the cords are also common. (It would be bad for the student to explain the diagrams to him too fully. There is no more common mode of wasting time than by students sprawling over drawing-boards copying diagrams.) The drawing shows the compound stress diagram, and also the separate diagrams of the two component trusses on the supposition that half of the load is distributed on each of them. The pressures on the supports are found by taking moments. The stresses shown on the compound diagram should be the algebraic sums of the stresses of the component diagrams. It will be advisable for the student to "go round" the several joints, as has been already advised, marking the compressions and tensions on the members concerned. It is instructive to compare the compound diagram in Fig. 2 with the diagram in Fig. 1, and to note the effect of the two new members of Fig. 2 in modifying the stresses in the remaining members; it is seen that they reduce the maximum stress of the diagram. Results of this kind could not be foreseen, and the utility of diagram-drawing is made evident.

These particular examples are, it need hardly be pointed out, not practical examples. It will be useful for the student who wishes to become expert at the work to set himself practical problems, as, for example, showing the action of a moving load, like a railway train drawn by a heavy locomotive, placing the load in progressive positions on the girder. He should also in some reasonable way deal with the weight of the girder itself and the other "dead load" which it sustains. Stress drawing is useful and interesting work when intelligently done.

In these modern times of exaggerated individuality and universal polemics it is dangerous to commit oneself to an assertion of completeness or finality, and I shall not risk it; but, so far as questions of strength are concerned, I have endeavoured to cover as much ground as is absolutely necessary to those whose business it is to design buildings of any kind, and I think this ground has been covered. Like every subject under the sun, this subject (or these subjects) of strengths and dispositions of materials in structures may be developed infinitely, but the practical man cannot afford to spread himself infinitely in every direction. From time to time specialists have to be called in, when exceptional circumstances arise, but it is well to be able to determine when someone is needed with more special knowledge than we possess and to be able to intelligently consult with such a one over the problem in hand.

We have reached an interesting period in connection with the consideration of iron girders. It is about sixty years since this mode of construction may be said to have been much resorted to. In many cases old girders have had to be replaced with new girders, and there are lessons to be learned by observing in what ways the old structures were defective. The chief defect probably was that sufficient care was not exercised to provide for the easy regular removal of scaling rust and the prevention of rust at vital parts by constant attention and painting. I am particularly reminded of this because I see every day before me the renewal of iron bridges proceeding with such speed as a railway company can manage without too great interference with the regular traffic. The Niagara suspension bridge has disappeared, the recent damage to Telford's bridge at Bangor suggests thoughts, and I should be curious to know exactly how matters stand with the Britannia tubes. I think there is a noticeable general preference now for continuous plate webbed girders (having the webs stiffened by transverse T-irons riveted to them) over braced girders for moderate spans. There should be no foolish hiding of ironwork in such ways as that vital parts cannot be reached by the cleaner and painter.

Keystones.

Montrose Carnegie Library Competition.—The Montrose Town Council have accepted the plans of Mr. J. Lindsay Grant, of 2, St. Peter's Square, Manchester, for this building, which is estimated to cost £6,000.

The Memorial to the Royal Marines which has been erected in St. James's Park, near the Admiralty, was executed by Mr. Adrian Stokes, sculptor. Mr. T. Graham Jackson, R.A., supplied the design for the pedestal.

South Kensington Museum.—The basement of the new buildings of the Victoria and Albert Museum has been completed; and the contract for the next portion given to Messrs. Holliday & Greenwood, Ltd., of Brixton, who are now making the front picturesque with enormous derricks. As soon as these preliminaries are finished a very rapid rate of progress may be expected.

St. Louis Exposition.—Among the members of the British Royal Commission to look after the British interests in connection with the Exposition at St. Louis next year are:—Sir Edward J. Poynter, P.R.A.; Sir Lawrence Alma-Tadema, R.A.; Sir C. Purdon Clarke, Director of the Victoria and Albert Museum (Art Museum), South Kensington; Mr. Edwin A. Abbey, R.A.; Mr. Thomas Brock, R.A.; Mr. John C. Hawkshaw, president of the Institution of Mechanical Engineers; Mr. T. G. Jackson, R.A.; Mr. W. Henry Maw, president of the Institution of Mechanical Engineers; Mr. Francis G. Ogilvie, director of the Edinburgh Museum of Science and Art; and Mr. William Q. Orchardson, R.A.

A Portrait of the late J. F. Bentley, by M. René le Brun de l'Hopital, is exhibited at the new Gallery, where there are also one or two Italian sketches by Mr. Philip Norman.

Two new Board Schools at Newcastle-on-Tyne are to be erected, one in the west of the city and the other in the east. The architect of the former is Mr. Charles Walker, of Eldon Square, Newcastle, and of the latter, Mr. Thompson, of Newcastle.

Partnership.—Mr. George Pearson, architect and surveyor, of 58, Moorgate Street, London, E.C., has admitted his son, Mr. J. Herbert Pearson (who has been associated with him for some years), into partnership from May 1st. The practice will be continued under the style of "George Pearson & Son."

A Church Competition.—The trustees of the Saltburn-by-the-Sea Wesleyan Church recently accepted the plans and designs of Messrs. Garside & Pennington, architects, Pontefract and Castleford, in a competition for a new Wesleyan Church. The church will accommodate 550 and is to cost £6,000, with tower and spire.

New School for Currie, Midlothian.—The Currie School Board has selected the design sent in by Mr. William Baillie, architect, 223, Hope Street, Glasgow. The building is of rubble masonry with dressings of Dumfriesshire sandstone and roofed with green slates. Accommodation is provided for 206 pupils with central hall, cloakrooms, teachers' rooms, &c. The estimated cost for the whole is £2,676.

High Wycombe Town Hall Competition.—The first premium of 100 guineas has been awarded to Messrs. John J. Bateman, Charles E. Bateman and Alfred Hale, of 81, Edmund Street, Birmingham. The second design in order of merit was sent by "F. H.," of 10, Cheyne Road, Chelsea; the third by Mr. J. Edwin Forbes, 21, Waterloo Street, Birmingham; and the fourth by Messrs. Willes & Anderson, of Adam Street, Adelphi, London.

Bradford Town Hall.—The question of the extension of Bradford Town Hall came before a special sub-committee of the Bradford Corporation last week. Plans had been prepared by Mr. F. E. P. Edwards, the city architect, for the provision of an extension behind the present building, on the site of the Old Conditioning House, but Mr. Norman Shaw, R.A., advised that another storey should be placed upon the existing Town Hall, and the committee had this opinion before it last week. A general feeling was expressed that it would prove unsatisfactory to add a new storey to the old building, but for the guidance of the Committee Mr. Edwards was requested to prepare a fresh elevation for a building on the Conditioning House site carried up one storey above the Town Hall.

Castleford Library Competition.—The urban district council of Castleford, Yorks, appointed Mr. Butler Wilson, F.R.I.B.A., as assessor in the competition for the proposed new free library, and he has now made his award as follows:—1st premium to design No. 16, submitted by Mr. George H. Vernon Cale, of 60, Newhall Street, Birmingham; 2nd premium to design No. 110, submitted by Mr. William Bakewell, F.R.I.B.A., of 38, Park Square, Leeds. The assessor has placed the following six designs next in order of merit:—No. 32, Mr. H. V. Ashley, 50, Berners Street, London; No. 113, Mr. Frank L. Heslop, East Parade, Leeds: No. 28, Mr. James Carter, 64, Hinkle Street Darwen; No. 18, Mr. Arthur McKewen, 3, Newhall Street, Birmingham; No. 71, Mr. Henry T. Hodges, 7, First Avenue, Heaton, Newcastle; and No. 69, Mr. A. F. McMilligan, Central Chambers, Castle Street, Liverpool. 124 designs were received, and they were publicly exhibited at the Mechanics' Institute, Castleford, from April 27th to May 2nd.

Mr. John J. Burnet, A.R.S.A., the eminent Glasgow architect, has, on the recommendation of the president of the Royal Institute of British Architects, been appointed assessor for the new infirmary at Manchester. This building is intended to contain accommodation for 500 beds.

The Manchester Society of Architects held its annual general meeting on April 30th, when the following officers and members of Council were elected:—President, Mr. J. W. Beaumont, F.R.I.B.A.; vice-presidents, Mr. John Ely, F.R.I.B.A., and Mr. W. A. Royle, F.R.I.B.A.; hon. secretary and treasurer, Mr. Paul Ogden, F.R.I.B.A.; assistant hon. secretary, Mr. George Brown. Members of Council—Fellows: Messrs. Alfred Darbyshire, F.R.I.B.A., F.S.A., Edward Hewitt, F.R.I.B.A., J. D. Mould, F.R.I.B.A., Isaac Taylor, J. B. Gass, F.R.I.B.A., Jesse Horsfall, F.R.I.B.A., A. J. Murgatroyd, John H. Woodhouse, F.R.I.B.A., and P. S. Worthington, M.A., A.R.I.B.A.; Associates: Messrs. A. E. Corbett, A.R.I.B.A., L. H. Dutch, A.R.I.B.A., and A. H. Mill, A.R.I.B.A.

South Wales Architects.—The annual dinner of the Cardiff, South Wales and Monmouthshire Architects' Society was held on Thursday last at Cardiff, Mr. David Morgan, the president, presiding. Mr. E. Seward proposed the toast of "The Royal Institute of British Architects and the Architectural Association," and Mr. Henry T. Hare, in responding, said the Institute was a national and not a London body, and its desire was to embrace all the architects' societies in the kingdom. Speaking of registration, Mr. Hare said he was not prepared to make a definite announcement, but he would say that the Council of the Institute had come to the conclusion it would not be to the interest of the profession that the Registration Bill should be pressed forward. The objections to the Bill were more on account of details than of broad principle. He had had the pleasure that day of going over their new town hall and law courts, and in the course of his experience he had never seen a more ideal site for municipal buildings than that chosen by the authorities at Cardiff.

At the Royal Academy Banquet on Saturday evening the Archbishop of Canterbury said: "I fear that, though at all times the Church has been bound to welcome the aid of architecture, the view always taken of architectural skill and talent has not been precisely that which we should take to-day. The architecture which two hundred years ago was called into requisition by the Church was not the kind of architecture which we honour with our special praise and admiration now. But to-day I, for one, look forward to no distant date when we shall again rejoice to see our churches clothing their walls with the painter's art, which has been too long banished from them. At this moment there are few of our great churches in England in which great pictures are to be seen. That is one of the strangest and most inexplicable facts—with the exception of the great pictures of Mr. Watts in St. Paul's Cathedral and the picture often referred to by your great predecessor, Lord Leighton, in the village church of Lyndhurst, I can scarcely think of more than two or three examples in any of our leading churches."

Obituary.

Mr. James Cordwell, of the firm of Messrs. Cordwell Brothers, builders and contractors, of Great Marton, Blackpool, died last week.

Mr. Henry Arthur Neal, of Brighton, died last week. He was born in 1834, and was apprenticed to the building trade, acquiring his knowledge of it with Messrs. George Cheesman & Son. Subsequently he carried out the duties of inspector of municipal highways for thirty-one years.

Construction Notes.

The Architect's Knowledge of Construction. THE meeting of the Architectural Association last week was chiefly noticeable for the display of crass ignorance on the part of the majority present of construction and of the results of investigations and tests that have been made. Mr. A. Needham Wilson did good service in renewing attention to the subject of architectural education, in deprecating the waste of time and brains entailed in useless archæological studies, and in adding his testimony to the need for the establishment of a testing institution for the study of materials and methods of construction pertaining to architecture. I am in agreement with him in thinking the Royal Institute of British Architects does not do its duty. When we see the active support given by the Institutions of Civil, Electrical and Mechanical Engineers to the testing and study of practical problems connected with their professions, all must feel ashamed of the architectural profession. The Surveyors' Institution can build for itself a fine large home, but the Royal Institute remains miserably housed because the architects of the kingdom are so selfish (or rather, one would say, foolish and ignorant enough to think they would gain no advantage). But the speakers on Friday evening were mostly crying for the moon. They called for tests to be made which have been already done; they seemed ignorant of the tests carried out, and being carried out, by the British Fire Prevention Committee. As one instance we may refer to the expressed desire to know the behaviour of reinforced or armoured concrete under fire, as though this had not been thoroughly investigated by the French Government, in Germany, and elsewhere on the Continent, and the results to be found in any of the works on the subject. The architectural profession and the building trade are not acquainted with their own literature. The examinations of the Institute and other bodies, and those of South Kensington, are remedying this in some degree by causing students to make themselves acquainted with a little of the immense source of information, but too much time is wasted in study of archæology and crazy methods of setting out the Orders, the Ionic volute, &c., the study of quantity and land surveying, &c. Mr. Wilson rightly insisted upon the need for the study of chemistry and physics, but he did not seem to understand that a real knowledge of these would enable one to judge of the merits or demerits of most of the new materials and inventions introduced. The engineer has a far greater number of important new inventions put before him, and yet is not afraid to use them because as a rule he is able to judge of their value by his general knowledge. Another speaker was not much in favour of laboratory tests, as he thought they could not or did not investigate the points which might arise in practical work, and referred as an instance to the destructive effect in some conditions of the protective substances used in making wood non-flammable. But this is due to the investigator not being a practical man, not being experienced in the trade or profession in whose interest he is working—in not knowing what to look for. This effect of the chemicals used in preserving wood is not new—it has been known for very many years, and a professor who knew his business would especially test for this. All the artistic professions are noteworthy sinners in respect to the neglect of reading and the study of scientific subjects, but unless architects wake up they will find themselves relegated more and more to becoming mere decorators, losing bit by bit the various branches of their art-science to specialists and engineers as they have lost many already (for instance, bridges, ventilation and heating) to the everlasting detriment of architecture. It is not that the field is too wide for competent study. An engineer, and especially the naval architect, has to know much more and more intricate subjects than the general body of architects. The brains of our students are no more puny than theirs, and with efficient education all would be well, though it must be confessed the profession is often made a stalking horse for fond parents to put their dullest children on to. But the architect is called upon to be a leader of men, and we must call upon him to rise to the position—we cannot be concerned if the weaklings sink to their proper position. It should be recognised that the greater artist is the more practical man (indeed, I may say, the scientific man), and without knowledge one may not look for progress—the everlasting cry. H. K. D.

Builders' Notes.

Mr. John Curnock, builder and contractor, of Clifton, who died on March 16th, left an estate of the gross value of £40,534.

The Southport Painters' Strike has been settled after a duration of three weeks. A board of arbitration and conciliation is to be inserted in the rules.

Mr. William E. Farrer, engineer and sanitary specialist, has removed his offices and showrooms from 36, Cannon Street, Birmingham, to Star Works, Cambridge Street, Birmingham.

The New Workhouse Infirmary, Newmarket, has been supplied by Messrs. E. H. Shorland & Brother, of Manchester, with their patent Manchester stoves with ornamental tiled sides and with descending smoke flues and patent Manchester grates.

Messrs. E. F. Blakeley & Co., iron roof and building manufacturers, Vauxhall Ironworks, Liverpool, have secured the contract for steelwork at the generating station and car sheds for the Stalybridge Corporation, and the drill hall for the Liverpool Branch of the Navy League.

American Strikes.—General strikes began in New York on May 1st, and 30,000 labourers, mostly Italian navvies, are out, causing delays in the subway works and the excavations for large buildings. Reports of strikes are also to hand from a number of other localities. The demands of the men are mainly for an increase in wages.

The Kitchen Fittings at the New Baltic Exchange have been supplied by Messrs. Benham & Sons, Ltd., 66, Wigmore Street, London, W. They include a large central hot-plate for coal, steam boiling pans and vegetable steamers, a coke grill, various gas hot-plates and other fittings, extensive steam carving tables for the serving room, and various other fittings for still room, sculleries, &c.

The Institution of Civil Engineers held its annual general meeting last Tuesday week, Mr. J. C. Hawkshaw, president, in the chair. Sir William H. White was elected president for the sessional year 1903-4; and the vice-presidents chosen were Mr. Francis William Webb, Sir Guilford L. Molesworth, K.C.I.E., Sir Alexander R. Binnie and Dr. Alexander B. W. Kennedy, F.R.S. The council have made the following awards for papers read and discussed before the Institution during the past session:—A Telford gold medal to Mr. Maurice Fitzmaurice, C.M.G.; a Watt gold medal to Mr. Bertram Hopkinson; and a George Stephenson gold medal to Mr. P. J. Gowan. Telford premiums to Messrs. Charles Hopkinson, B.Sc., Ernest Talbot, F. W. S. Stokes, P. J. Cowan, J. T. Milton and W. J. Larke.

Electrical Notes.

A well-erected Overhead Line can be put up for about 40 per cent. less capital than an underground cable using the same section of copper in each case.

Three-phase Motors for Electrical Driving in Factories are preferable on the score of simplicity, flexibility and reliability, while, if the plant is large, cheapness may also be laid to its credit. Almost the only objection to the system is its inability to meet the demands of such industries as require large and economical speed variation, printing (calico and letterpress), paper-making, &c.

Electrical Work in Russia.—Owing to the lack until recently of electro-technical schools in Russia, the electrical industry there has not made the progress that it has in other countries. There are only two dynamo factories in Russia, which are quite incapable of meeting the demand, and in consequence most of the electrical machinery is imported. Germany and Switzerland furnish the greatest quantity; next comes Great Britain; and then follow the United States, France and Belgium.

Third-Rail Electric Traction.—While electric inter-urban railways or light railways are multiplying very rapidly in the United States, only a very few of such lines, says the "Engineer," are built with the third-rail conductor, the overhead trolley wire being used in most cases even for lines intended for high-speed service. The Chicago and Aurora line is the most important of the third-rail lines, being 56 miles in length, operated by trains of cars on the multiple-unit system at speeds of 50 to 60 miles an hour. The transmission line carries a current at 16,600 volts, which is reduced at two sub-stations.

The Dundee System. — The electrical engineer of Dundee has reported that the electric supply network in the centre of the city is so weak in many places that it is only a question of a few months before a succession of severe breakdowns would take place. The engineer suggests that the distributors be drawn out of the iron pipes in which they are laid, and that three-way distributor ducts be put down to receive new cables with properly-designed distribution boxes. The estimates involve the relaying of 8,300 yds. of three-way ducts and distributors complete with connection boxes, and all the labour involved by the changing over of consumers from the old to the new mains at a cost of £9,843.

German Electrical Industry. — Consul-General Schwabach, reporting on the past year, comments on the general depression in trade and industry which was experienced during the previous year in Germany, and states that it continued to make itself felt, though in a less degree, during 1902. The most unfavourable position of all, he remarks, was that of the electrical industry, only those works keeping going which were sufficiently cautious during the boom of 1900 not to enlarge their premises and increase their expenses without due forethought. Little was done in the construction of electric central distributing stations and of street railways. In the summer of last year a combination of electrical firms was discussed for the purpose of watching the interests of the trade, and at the end of the year and the beginning of this combinations of the largest German firms actually took place—first between the Aktien Electricitäts Gesellschaft and the Union, then between Siemens and the Nuremberg Schuckert Works, which latter firm had suffered very severely from the disastrous crisis of the previous years. A complete amalgamation is not contemplated, but certain branches are combined in order to cheapen the cost of production.

Bricks and Mortar.

Aphorism for the Week.

By much slothfulness the building decayeth, and through idleness of the hands the house droppeth through.—ECCLESIASTES x. 18.

Our Plates. THE premises in Parliament Street, Nottingham, have recently been erected on the site of the "Old Sun Inn," by Messrs. Brewill & Baily, FF.R.I.B.A., architects, as offices, &c., for their own use. The premises consist of two lock-up shops with basements, together with offices on the ground, first and second floors, the upper portion being a residental flat. The exterior is built of red sand bricks, with brick dressings to the windows. The pilasters to the shops, &c., are of black granite, the cornices over the pilasters and also the angle quoins being of stone. The main cornice is of wood, and the roof is covered with tiles. The whole of the woodwork is painted white. The porch is panelled in oak, the entrance-hall, staircase and many of the rooms also being panelled, and the whole of the floors are constructed with solid blocks in oak and other wood. The contract for the brickwork, &c., has been carried out by Mr. Maule, the joiner's work by Mr. William Appleby, the plumbing by Messrs. Humphrey & Co., and the marblework by Mr. Gibson.—Mr. John Belcher's drawing is exhibited in this year's Academy.

The Oxford Martyrs' Memorial. THE memorial to the Oxford martyrs is showing alarming signs of decay. The stone of which it is built is soft and perishable, and standing in so open a spot the result of exposure is shown by the gradual destruction of the carving. Only a few weeks ago an unusually large piece of the stonework over one of the niches in which the figures are placed fell, presumably through the frost which had followed a period of prolonged dampness. The damage is not confined to the actual memorial, but is showing itself in the steps at the foot, which have been gradually forced asunder by the frost. The memorial is one of the earliest works of the late Sir Gilbert Scott, who took for his general model the crosses erected by King Edward I. in memory of his Queen Eleanor. The first stone was laid in May, 1841. The structure stands on a small piece of ground which forms the apex of the angular churchyard of St. Mary Magdalene, Oxford.

The Campanile Bricks. Cav. Giacomo Boni has supplied some interesting particulars of his examination of the remains of the fallen Campanile at Venice. Great numbers of bricks were, it appears, roughly tracked by the makers with all kinds of figures, sometimes with a number, sometimes with a private mark and sometimes with letters. One brick, for instance, had the letters "DCI." impressed on it, evidently a sign that in the particular batch to which it belonged there were a thousand one hundred odd bricks. The shape of the bricks showed that they had been previously used for various purposes. Some had been utilized for arches, some for fortifications, others for tops of walls. The most important feature about them, however, is that they are not Venetian but Roman bricks. This was deduced by Signor Boni from their general appearance, shape and texture. The bricks, apparently, when being manufactured, were not manipulated like modern bricks and made from a mass of clay already stirred up and kneaded ready for use, but were formed from slices of the clay as it was found without its natural layers being disturbed. This process resulted in each individual brick being able to support a weight quite four times as great as that which can be borne by bricks of modern manufacture. One of the bricks, which are of the first century, had marks representing the impression of a horseshoe, thus conclusively proving that horseshoes were known to and used by the ancients. Another brick bore an impression of the tips of a man's fingers pressed quite deep into the clay. Only about one brick in every thousand bears this impression. Signor Boni assumed that this was a private mark, used once for every thousand or so bricks that were baked by the manufacturer. Some of the bricks showed marks left by animals which had been allowed to touch the clay before it had been baked—one showing marks made by a large dog, one by a pig, one by a calf, three by a goat, and several by sea birds.

New Ordnance Survey Maps. IT is due to the laudable efforts of Colonel Duncan A. Johnston, R.E., the present Director-General, that the service of the Ordnance Survey has been improved, especially in the issue to the public of improved maps, reduced from the standard 1in. sheets. Last year the publication of maps of England and Scotland on the scale of four miles to the inch, which were printed in five colours, was commenced, considerably increasing their usefulness in affording an idea of the character of the country represented. A similar map is now being brought out on the scale of two miles to the inch. On these the different tints are not employed in the representation of contours. The contours are outlined, but only the bolder slopes are shown up by stipple, no attempt being made to indicate by shading the gentler slopes. The printed area of each sheet measures 18in. by 12in., and thus covers 864 square miles of country. Each sheet may be obtained mounted on linen and folded between covers so as to fit comfortably into the pocket, and so that any section of it can be consulted without the whole map being opened out. It is not intended that sheets of this map shall be issued for the whole of the country, but for certain areas only. Each sheet is issued separately at the price of 1s. It may also be noted that the last undertaking in the original programme of the Ordnance Survey is now approaching completion. This is the survey map on the scale of ten miles to the inch, which was designed originally as an index to the 1in. map, but was recommended by the Military Map Committee of 1892 for use as a strategic map. The scale has been found useful for many purposes for which the larger maps were unsuitable. Amongst other features are shown towns, villages, all first-class and most second-class roads, railways, rivers and lakes. On this scale the map of Great Britain comprises twelve sheets. Of these, eight sheets have been published in outline, three more sheets are nearly ready, and the last sheet will be published in about three months.

The Bede Memorial. THE work of designing the Bede Memorial has been entrusted to Mr. Charles Hodges, of Hexham, whose knowledge of Anglo-Saxon stones, and whose works—notably the Caedmon Cross, the Acca Cross and the Rothbury Cross—are a guarantee that the monument will be in keeping with the best traditions of Northumbrian feeling and craftsmanship. The cross is to be erected within hail of Monkwearmouth, on Roker Point, where it will be seen by the vast holiday population of Wear and Tyne. The cross, 25ft. high, will be Anglian in form, as being germane to the district and contemporary with Bede's time. The shaft of the cross on the west side will be ornamented with scroll patterns from the Lindisfarne Gospel and from the stones at Jarrow, and will contain, within a twisted loop of the duck-billed serpent seen on the Monkwearmouth doorway, pictorial subjects from
life of Bede. On the east side will be Ro
lettering, giving two extracts from Be
work. On the south side, within a v
scroll, will be carved in alto- and bas-rel
the heads and busts of the friends a
associates of Bede. On the north side
scroll introducing birds and animals spri
ing from a harp, emblematic of his poe
gifts, will show Bede's love of Nature.

Lyceum Theatre. THE Lyceum Theatre, which w
put up to auction the week bef
last, but not then sold, d
not come to the hammer because it
been a failure as a place of enterta
ment, but because the County Council h
adopted a regulation that no woodw
should be introduced into the auditorium
theatres. The Lyceum stands on part of
site of old Exeter House, known previou
as Burleigh House, where Elizabeth's gr
minister lived. "Exeter Change" rose
the ruins of Exeter House, and was fam
in the latter part of the eighteenth centu
for its menagerie of wild beasts.
academy or exhibition room for the Socie
of Artists was built about 1765 from desig
by Mr. James Payne, architect. It is from t
exhibition that the theatre derives its nan
After the insolvency of the Society a porti
of the place was converted into a theatre
1790, and into an English opera house
Mr. Arnold in 1809. Various exhibitio
and entertainments followed. The theat
was rebuilt in 1816, but destroyed by fire
1830. In 1834 the new Lyceum was open
with English opera, but without success, a
seven years later Balfe renewed the attem
Yet in three more years music had departe
and an equestrian entertainment was bein
given. The theatre was designed by
Beazley, architect, who died in 1851, and w
also designed the preceding theatre destroy
by fire and the present St. James's Theat
The interior decorations were made
Madame Vestris's time (1847).

Replica of a French Abbey. THE new chapel in Nort
wood Park Convent, Cowe
has been erected in co
nection with the Benedictine convent ther
It is a replica of the abbey of St. Cecili
Solesmes, which was occupied by these nu
till their departure from France for the Is
of Wight, but is a temporary structure. Th
plan is the same, but much reduced, an
there is no imitation of the handsome decora
tive character of the exterior of the beautif
and costly structure on the Continent. Bu
the *facsimile* is to be found inside. Th
architecture is of the style of the thirteent
century, on a cruciform plan. The nun
choir is the largest part of the church, an
is 25ft. wide and of proportionate length, an
there are two ranks of stalls. At the end
an apse, with the throne of the abbess, an
above is built an organ, which has bee
brought from Solesmes and reconstructed
The grille, which separates the choir fro
the lady chapel (facing the choir), has als
been brought over from the abbey. Spac
is provided for outside worshippers to atten
the services, facing the high altar. It is
timber-framed building, lined with slab
plaster. The columns, capitals, bases an
arches are all cast in plaster, and the whol
of the walls from the floor to the barrel-ro
are white throughout. The floors are all o
terrazzo mosaic. The architect of the new
building is Mr. Williamson, of London, wh
also designed the chapel which has recently
been completed at St. Michael's Priory
Clarence House, East Cowes. This is a
smaller building than that of Northwood
but constructed on the plan of the abbey o
St. Cecilia. Messrs. Godson & Sons are the
builders of the chapel at Northwood, and
Messrs. Brading & Sons, of East Cowes, built
the chapel at Clarence House.

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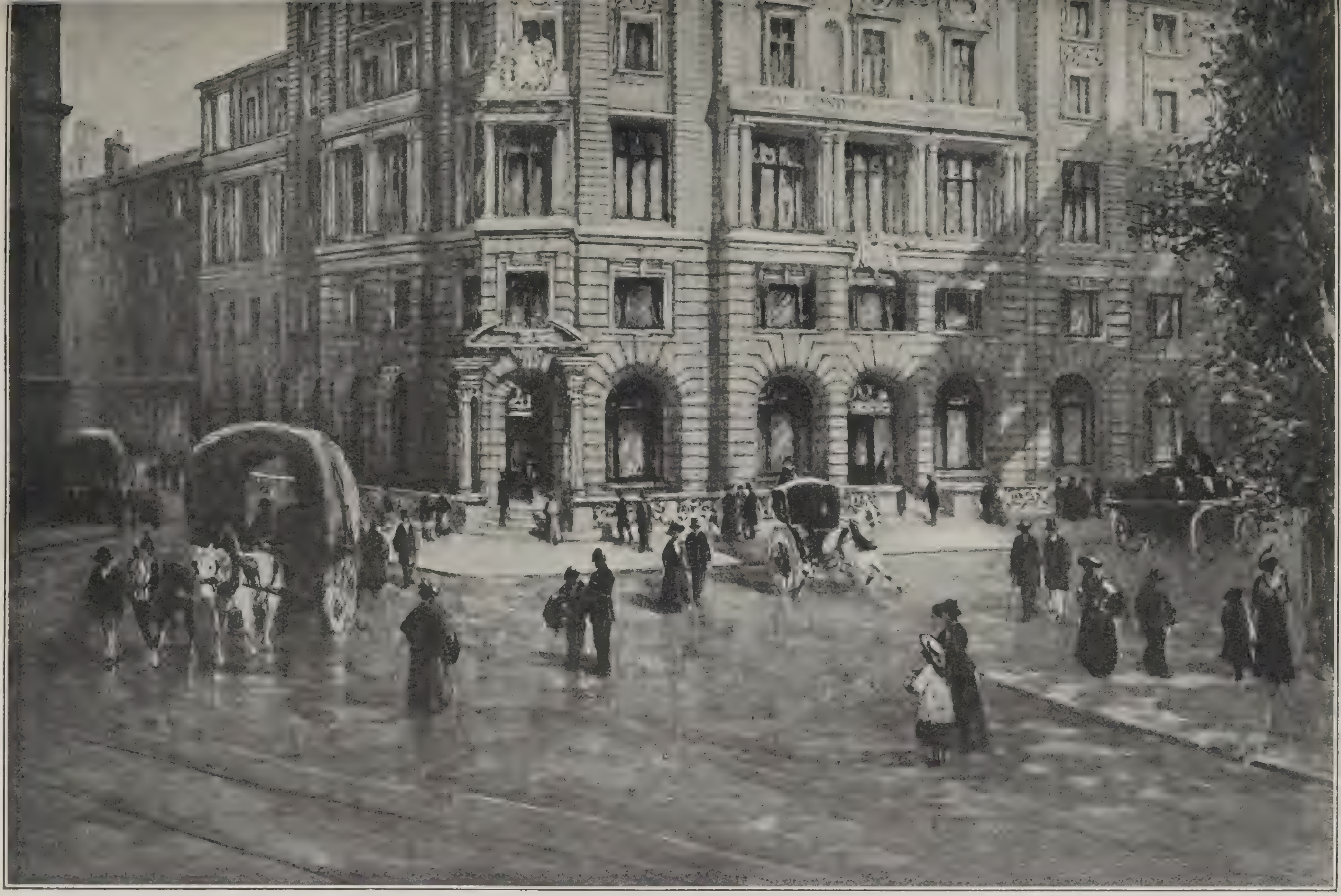
Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, May 6th, 1903.



New Building for the Royal London Friendly Society, Finsbury Square, E.C.
John Belcher, A.R.A., Architect.

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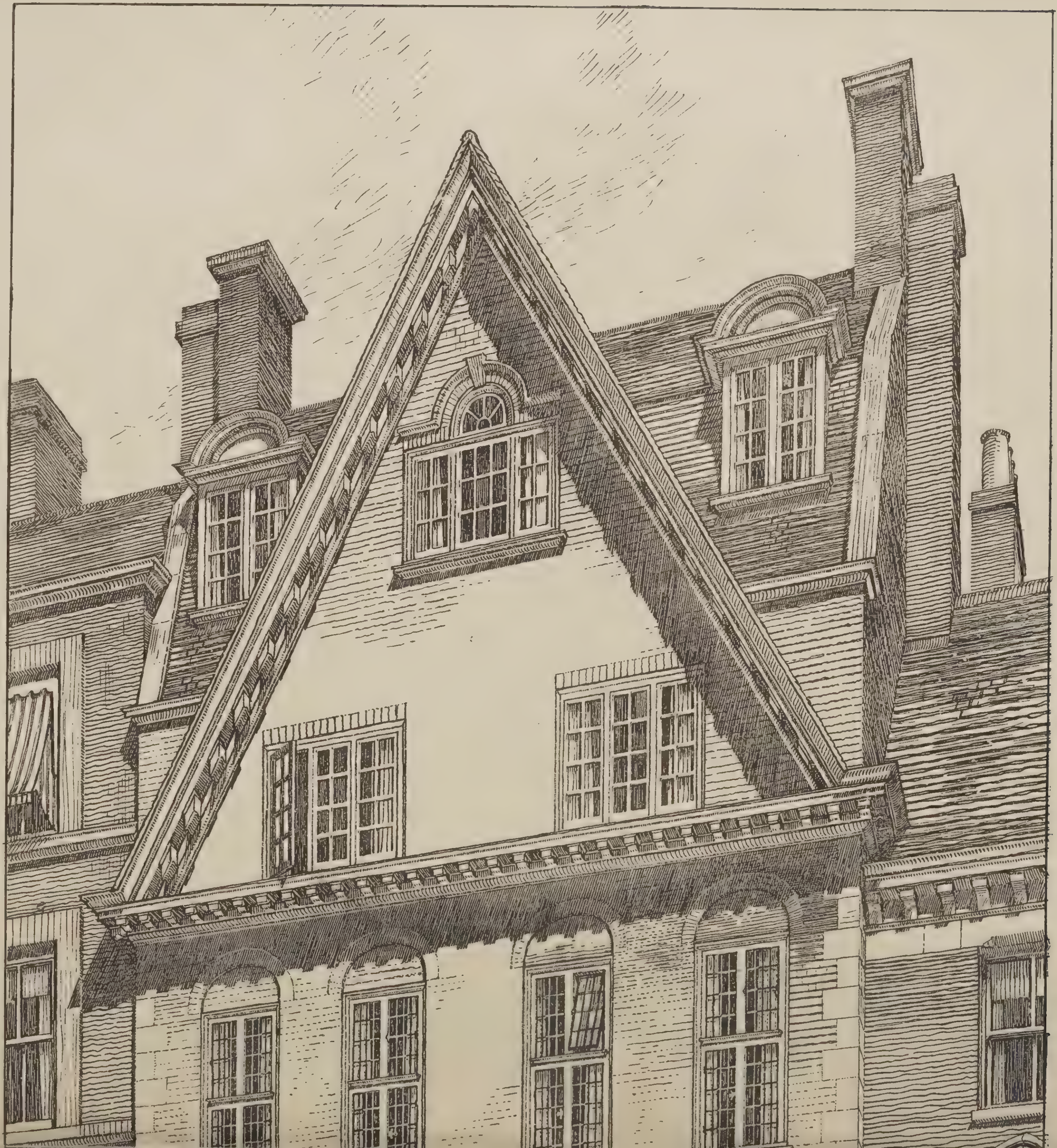

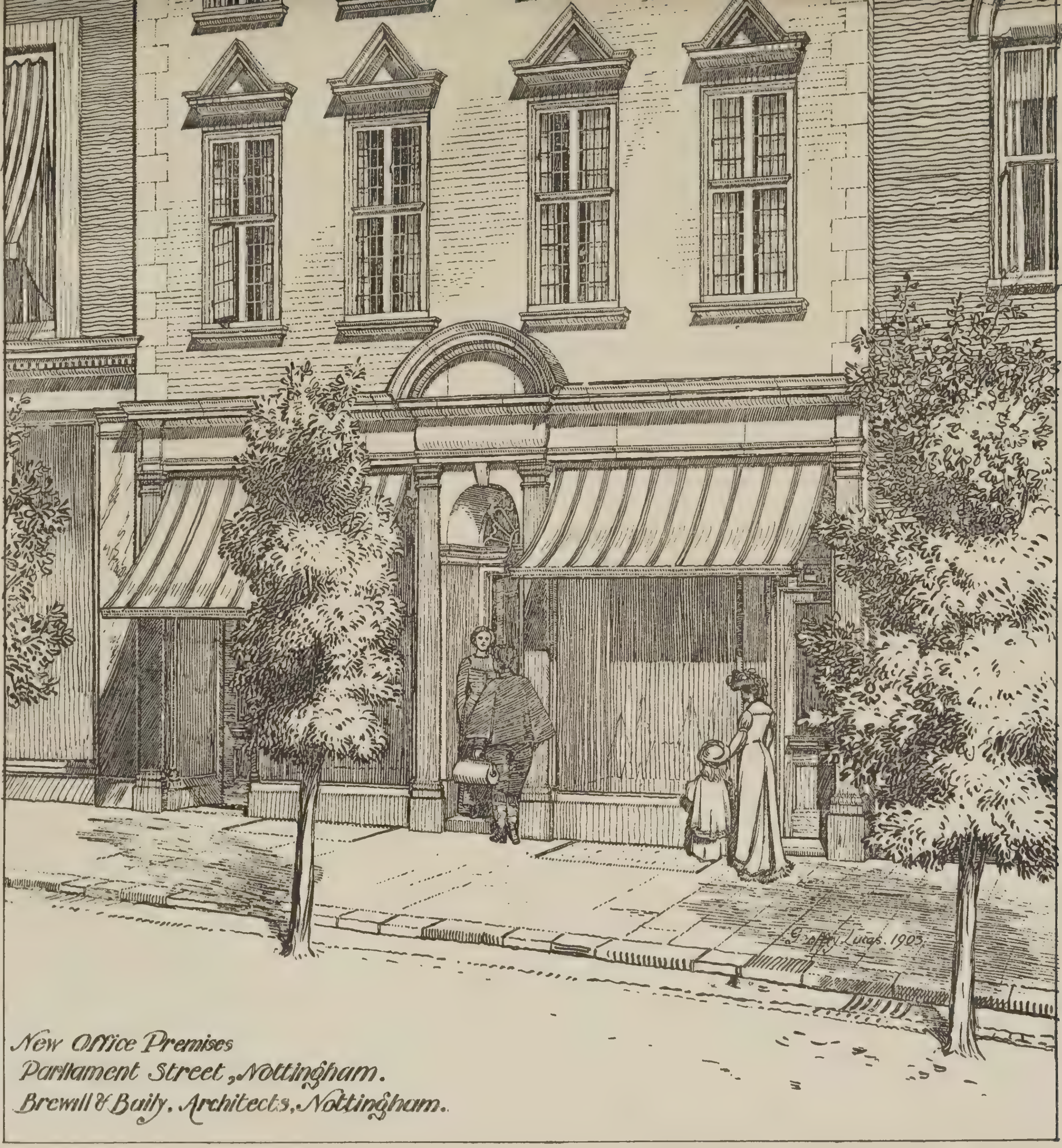
Geoffry Lucas. 1903.

New Office Premises
Parliament Street, Nottingham.
Brewill & Baily. Architects, Nottingham.

"PHOTO-LITHO." R. J. EVERETT & SONS, 58 LUDGATE HILL, E.C.

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Tenders.

Information from accredited sources should be sent to The Editor" at latest by noon on Monday if intended for ublication in the following Wednesday's issue. Results of enders cannot be accepted unless they contain the name of u Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be ated will be sent post free on application to the Manager, UILDERS' JOURNAL, 9, *East Harding Street, E.C.*

Bournemouth.—For the enlargement of the head postfice at Bournemouth, for the Commissioners of H.M. 'orks and Public Buildings:—

		A
W. Hoare	£3,496	.. £183
C. A. D. George & Harding.. ..	3,433	.. 122
Jenkins & Sons, Ltd.	3,363	.. 176
J. McWilliam & Son	3,350	.. 80

[A.—Credit old materials.]

Branksome (Dorset) —For additions and alterations Heatherlands girls' school, Branksome, for the Kinson '.D.) School Board. Mr. Walter Andrew, architect and rveyor, Parkstone and Poole. Quantities by the chitect:—

Miller & Sons..	£2,212	0	0
Burt & Vick	2,065	0	0
A. & F. Wilson	2,034	17	3
J. Hillman	1,925	13	0
Baker & Pearcy	1,890	6	0
C. Lawford*	1,717	0	0

* Provisionally accepted.

Colchester.—For the erection of the Grand Theatre' lchester, for Mr. H. Slocombe, Forest Gate. Mr. J. W· art, F.S.I., architect, Colchester. Quantities by the chitect:—

E. Saunders, Dovercourt	£24,475
Waring & Gillow	24,000
R. Beaumont, Lexden, Colchester	22,965
J. McKay, Clacton-on-Sea	22,730
E. West, Chelmsford	22,449
Dupont & Co., Colchester	21,997
Grimwood & Sons, Sudbury	21,880
Chessum & Sons, Bow, E.	21,400
Kenny, Ipswich	21,000
Patman & Fotheringham, London	20,700
H. Lovatt, West Kensington	20,700
Kirk & Kirk,* Westminster..	20,505
W. C. T. Chappel, Colchester	19,640
Vickers & Son, Nottingham	19,090
W. Chambers, Colchester	18,989

[Extension of time required by last]
* Provisionally accepted.

Erith (Kent).—For the making-up of Horsa Road and ngist Road, Northumberland Heath, and Victoria eet, Victoria Cottages, Alfred Road, William Street, ıbrooks Cottages, and Stapley Road, Belvedere, under Private Street Works Act. for the Erith Urban trict Council. Mr. A. H. Jennings, surveyor for private eet works:—

Northumberland Heath.

R. Ballard, Ltd., N.W.	£3,333	0	0
D. T. Jackson, Essex	3,320	4	5
Lawrence & Thacker, S.W.	3,202	10	0
G. Rackham, Norwich	3,115	14	0
T. Adams, London	3,097	1	4
W. H. Wheeler, Southwark, S.E. ..	3,080	7	6
S. J. Brice & Sons, Rochester	2,987	14	8
Streeters & Todhunter, Surrey ..	2,970	0	0
T. Free & Sons,* Maidenhead.. ..	2,896	11	5
G. G. Page,† 19, Lyndon Road, Belvedere	2,614	3	4

[Surveyor's estimate, £2,946 1s. 5d.]

Belvedere.

R. Ballard, Ltd.	£2,210	0	0
D. T. Jackson..	2,187	11	0
Lawrence & Thacker	2,138	3	6
T. Free & Sons	2,085	0	4
T. Adams..	2,014	2	10
G. Rackham	2,011	10	8
W. H. Wheeler	1,983	3	7
Streeters & Todhunter	1,982	0	0
S. J. Brice & Sons*	1,930	6	4
G G. Page†	1,741	6	2

[Surveyor's estimate, £1,948 9s. 6d.]
* Accepted. † Withdrawn.

astings.—For the laying of water-mains and the ply and fixing of hydrants and fire valves, &c., at r new workhouse, Ore, Hastings, for the Guardians. ssrs. A. W. Jeffery & Son, architects, 5, Havelock d, Hastings:—

Long, Lewes	£303	19	10
Upfield & Son, Hastings	302	13	0
Merryweather, London..	292	14	9
Blakeborough, Yorkshire	291	11	0
Glyde, Hastings	238	14	3
Shand & Mason,* London	230	4	6
Small, Hayward's Heath	229	3	3

* Accepted.

orden Colliery (near Castle Eden, Durham).—the construction of streets, drains, sewers, manholes, er-pipes, &c., at Horden Colliery, near Castle Eden, he Horden Collieries, Ltd. Mr. E. W. Lyall, engineer, Northgate, Darlington:—

J. Carrick, Durham	£2,400	0	0
T. Brown, Gateshead	2,120	1	5
J. Burn, West Hartlepool	2,072	11	1
McLaren & Co., Christon Bank ..	2,069	17	9
Tough Brothers, Sunderland	1,850	0	0
A. E. Hobbs, Stockton-on-Tees ..	1,706	19	11
J. Fowler,* Station Road, Darlington	1,667	4	8

* Accepted.

untingdon.—For the new post-office at Huntingdon, I.M. Office of Works, &c.:—

				A.		
G. Riches..	£3,175	0	0	—		
J. Parren & Son	2,707	9	0	—		
J. Guttridge	2,697	0	0	£50	0	0
Siddons & Freeman ..	2,417	0	0	47	0	0
F. Geddings	2,387	0	0	40	0	0
G. Wrycroft & Sons ..	2,225	0	0	54	0	0

				A.		
Redding & Son	£2,210	0	0	£56	0	0
F. R. Thackray & Co., Ltd.	2,137	10	0	140	5	0
W. Howard	2,102	18	0	75	18	0
E. W. Beech	2,040	0	0	20	0	0
G. Page & Son	2,012	9	0	74	11	0
M. J. Allen & Sons ..	1,894	16	0	65	0	0

[A. Credit old materials.]

Larne (Ireland).—For the erection of a sessions house at Larne, for the County Council:—

J. Ferris, Antrim	£1,465
D. McIlgorm,* St. John's Place, Larne, co. Antrim	1,445

* Accepted.

Llanbradach (Wales).—For the erection of twenty-five dwelling-houses at Llanbradach, for the Plasturtwyn Club. Mr. George Kenshole, architect, Station Road, Bargoed:—

Davies & Francis, Pontlottyn..	£5,625	0
J. Lewis, Caerphilly	5,505	0
J. Lloyd, Ystrad Mynach	5,250	0
J. Howells, Caerphilly	5,225	0
W. Jones, Wattstown	5,025	0
T. F. Howells, Cardiff	4,675	0
Thomas & Hughes,* Llanbradach ..	4,668	15
H. Shapcott, Llanbradach	4,425	0

* Accepted.

Llanfabon (Wales).—For building additions to Llechwen, parish of Llanfabon. Mr. A. O. Evans, architect, Pontypridd:—

Morris & Thomas, Pontypridd ..	£1,850	0	0
J. Howells, Abercynon	1,769	10	10
E. Turner & Sons, Cardiff..	1,758	0	0
Knox & Wells,* Cardiff	1,585	0	0

* Accepted.

London, N.—For the new higher elementary school and cottages, for the Finchley School Board:—

	School.	Cottage.
G. Batty & Son	£18,714	.. £1,438
J. Bird & Sons	18,631	.. 1,280
Coles & Sons	18,520	.. 1,300
Patman & Fotheringham ..	18,282	.. 1,278
Lawrence & Sons	18,097	.. 1,230
Kilby & Gayford	17,827	.. 1,197
Tout	17,346	.. 930
Gough & Co.	17,134	.. 1,100
Treasure & Sons	17,057	.. 1,038
Jarvis & Sons	16,784	.. 1,184
F. & E. Davey,* Southend ..	15,455	.. 980

* Accepted.

London, S.W.—For foundations for the new dwellings in Beauford Street, for the Chelsea Borough Council:—

Mowlem & Co. (work to be done in 16 weeks)	£5,131
Fortescue & Sons (15 weeks)	4,897
Greenham (14 weeks)	4,750
Holloway Brothers (18 weeks)	4,710
Dubb Brothers (18 weeks)	4,575
C. Wall & Co. (16 weeks)	4,459
Patman & Fotheringham (12 weeks)	4,273
Stimpson (14 weeks)	4,220
Cheeseman & Sons (14 weeks)	4,120
Foster & Dicksee* (16 weeks)	3,919

* Accepted.

Maesteg (Wales).—For sewerage works, for the Maesteg Urban District Council. Mr. Joseph Humphreys, C. E., engineer and surveyor:—

McKee & McNelly, Dungannon, Ireland.	£30,494
J. E. Evans, Cardiff	29,623
J. O. Brien, Maesteg	29,237
M. Thompson, Briton Ferry	28,170
A. Braithwaite & Co, Leeds	28,147
A. G. Collins, Barry	25,380
R. C. Brebner & Co., Edinburgh	25,027
Barnes and Chaplin, Cardiff	24,929
J. Riley, Cheltenham	24,390
G. Rutter, Barry	22,973
E. H. Page, Cardiff..	21,657
H. Hill,* Reading	19,023

* Accepted.

Oswestry.—Accepted for the erection of a new house, Weston Lane, Oswestry, for Mr. F. E Birch. Messrs. E. Bremner-Smith & Bremner, architects, Warwick Court, London and Oswestry:—

J. Higgins, Oswestry	£750

Oswestry.—Accepted for alterations to Albert Road Hall, Oswestry. Messrs. E. Bremner-Smith & Bremner, architects, Warwick Court, London and Oswestry:—

J. Higgins, Oswestry	£500

Oswestry.—Accepted for the erection of a new villa, Oakhurst Road, Oswestry, for Mr. T. D. Beckett. Messrs. E. Bremner-Smith & Bremner, architects, Warwick Court, London and Oswestry:—

Jones & Evans, Oswesty	£750

Oswestry.—Accepted for alterations to Plasfynnon, Oswestry, for Mr. S. Pryce Parry. Messrs. E. Bremner-Smith & Bremner, architect, Warwick Court, London and Oswestry:

W. Felton, Oswestry	£550

Oundle (Northants).—For the erection of an administrative block of an isolation hospital, fencing, drainage, &c., for the Oundle Rural District Council:—

W. Howard, Huntingdon	£2,090	19	0
J. Parnell & Son, Rugby	2,037	16	1
J. Bridgefoot & Son, Peterborough .	1,870	0	0
J. Lucas, Peterborough	1,850	0	0
G. Henson, Wellingborough	1,808	0	0
C. Pettit, Thrapston	1,724	0	0
Siddons & Freeman,* Oundle	1,710	0	0

* Accepted.

Wirral (Cheshire).—For the construction of the Fender Valley outfall sewer in the townships of Barnston, Bidston, Landican, Prenton, Storeton, Thingwall, Upton and Woodchurch, in the rural district of Wirral, and in the borough of Birkenhead, for the Wirral Rural District Council. Messrs. Beloe & Priest, MM.I.C.E., engineers, 13, Harrington Street, Liverpool:—

J. Lee & Son, Bebington	£53,600	0	0
J. Byron. Woolfold, Bury	51,107	0	0
J. & T. Binns, 104, Wellesley Road, Croydon	41,813	11	0
Bennie & Thompson, Warrington .	£40,682	19	6
S. Johnson & Sons, 6, Victoria Street, Manchester.. ..	35,873	0	0
A. Graham & Sons, Huddersfield..	35,231	0	0
Johnson & Langley, Leicester ..	34,951	12	5
Bower Brothers, Halifax	34,698	0	0
G. Read & Sons, Oldham	34,000	0	0
A. Kellett & Sons, Ltd., Birmingham	32,817	0	0
H. S. Buckley, Helsby	32,182	16	9
W. Roberts, Rock Ferry	29,690	0	0
G. Bell, Manchester	28,388	11	4
J. Thomas & Son,* Oxton	28,000	0	0
J. Ainscouth & Son,† Gladwick, Oldham	26,547	15	7

* Accepted. † Withdrawn.

Wootton (Isle of Wight).—For the erection of a private residence on Sea Copse Hill Estate, Wootton, Isle of Wight, for Mr. Thomas Boys. Mr. John I. Barton, architect, Ryde:—

Wheeler Brothers	£1,050	0
T. & E. W. Jenkins	1,038	10
Please, jun., & Co.,* Wootton	1,018	10

* Accepted.

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver.]

DURING THE WEEK ending May 2nd eleven failures in the building and timber trades in England and Wales were gazetted.

J. DUNN, road contractor, Harrogate. R.O. April 25th.

F. COUZENS, builder, Cardiff. R.O., April 24th.

A. H. CANNON, builder, Ealing. P.E., Brentford Town Hall, June 5th, at 12.

T. ELLIS, speculating builder, Eastbourne. Liabilities £2,700; assets £3,678.

S. Y. BROCK & SON, builders and contractors, Alburgh. Liabilities £2,586; assets £1,072; deficiency £1,514.

R. RUTTY, late builder, Moseley. Liabilities £119; assets nil.

R. NICHOLLS, timber merchant, Stoke-on-Trent. Gross liabilities £15,319; assets £9,574.

W. SPENDLOVE, joiner and builder, Upper Hartshay Liabilities £737; assets £127.

F. B. COOK, decorator, Reading. First meeting, Queen's Hotel, Reading, May 14th, at 11.30. P.E., Reading Assize Courts, May 14th, at 2.

G. J. GAWLEY, steam haulage contractor, Reading. First meeting, Queen's Hotel, Reading, May 14th, at 12. P.E., Reading Assize Courts, May 14th, at 2.

J. H. BAILEY, builder, High Wycombe. First meeting, 1, St. Aldgate's, Oxford, May 7th, at 12. P.E, Aylesbury County Hall, May 11th, at 11.

A. D. MITCHELL, builder, Derby. First meeting, O.R.'s, Derby, May 2nd, at 11. P.E., Derby C.C., May 12th at 11.

G. B. PHILLIPS, contractor, South Hayling. R.O. April, 21st. First meeting, O.R.'s, Portsmouth, May 6th, at 3. P.E., Portsmouth C.C., May 25th, at 11.30.

F. W. BLACKBURN, builder and contractor, Blackpool. First Meeting, O.R.'s, Preston, May 8th, at 3. P.E., Preston Sessions Hall, May 8th, at 11.

H. N. DAVIDSON, builder and contractor, Stretford, First meeting, O.R.'s, Manchester, May 4th, at 2.30. P.E., Salford C.C., May 5th, at 10.30.

G. BROWN, builder, Anstey. First meeting, O.R.s. Leicester, May 7th, at 12. P.E., The Castle, Leicester, May 8th, at 10.

C. A. FORD, builder, Leicester. First meeting, O.R.'s, Leicester, May 4th, at 12. P.E., The Castle, Leicester, May 8th, at 10.

W. CHAPMAN, builder, Bedlington. R.O. April 20th. First meeting, O.R.'s, Newcastle-on-Tyne, May 6th, at 11.30. P.E., Newcastle-on-Tyne C.C., May 7th, at 11.

G. DIXON, builder, Wallsend. First meeting, O.R.'s. Newcastle-on-Tyne May 6th, at 12. P.E., Newcastle-on-Tyne C.C., May 7th, at 11.

H. E. PERKINS, builder, Stoke Lane. First meeting, O.R.'s, Bristol, May 6th, at 11.30. P.E., Frome Mechanics' Hall, May 12th, at 12.

E. UPHILL, builder and contractor. Bath. First meeting, O.R.'s, Bristol, May 6th, at 12.15. P.E., Bath Guildhall, May 21st, at 11.30.

T. BARNARD, joiner, Portslade and Alresford. R.O., April 29th. First meeting, O.R.'s, Brighton, May 14th. at 10. P.E., Brighton C.C., May 14th, at 11.

J. TAYLOR, carting contractor, Doncaster. First meeting, O.R.'s, Sheffield, May 7th, at 12. P.E., Sheffield C.C.-May 7th, at 2.

J. JONES, mason, Haverfordwest. R.O. April 20th. First meeting, Pembroke Dock Temperance Hall, May 8th, at 12.

T. W. HUGHES, painter, Merthyr Tydfil. R.O., April 20th. First meeting, 135, High Street, Merthyr Tydfil, May 7th, at 12. P.E., Merthyr Tydfil Town Hall, May 20th, at 3.

The following companies are to be wound up:—

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Trade and Craft.

Sinks.

Messrs. Joseph Cliff & Sons, Baltic Wharf, Waterloo Bridge, London S.E., send us a copy of the sink section which forms the second portion of their new complete catalogue, now in course of preparation. This is a well printed catalogue and shows very clearly all the numerous varieties of sinks manufactured by the firm. They are formed of the Wortley fireclay and are coated with the hard "Imperial" porcelain white glaze, perfectly free from lead: but buff-glazing on the outside at the front and ends may be had without extra charge, and sinks can also be finished to order in ivory, French grey and red brown. They are strong and durable, straight and true in shape, and all internal angles rounded to prevent the accumulation of dirt. In the majority of the sinks the waste hole is placed in the centre at the back, the hole being, unless otherwise ordered, 2¾in. in the clear. In addition to the ordinary patterns Messrs. Cliff make a double sink, a combined sink and slop sink, a combined sink and wash-hand basin, extra-deep sinks, laboratory sinks, several varieties of drainer sinks, including a patent "open-overflow"; the "Claybury" hospital sink, combining the level bed of an ordinary sink with a deep bowl; many kinds of slop sinks, with and without flushing rims and some with wood rims; wash-tubs, the improved "Modern" pattern having a high back, covering pieces with soap trays over joints, and ribbed on the inner side of the front; "Yorkshire" brown stoneware sinks, pedestals with both ends rounded, a revolving post-mortem table (as supplied to the London Hospital), mortuary slabs, and Hellyer's patent bed-pan sink and slop sink. It will thus be seen that the catalogue is most complete and up-to-date.

Roofing Tiles.

Messrs. Stanley Brothers, Ltd., of Nuneaton, have issued a new illustrated list of their well-known roofing tiles, pipes, valleys, &c. So great has been the demand for their Staffordshire tiles that the firm has found it necessary to double their works at Burslem. These tiles are made in red and red-mottled; the latter are subjected to greater heat and a prolonged firing, the result being a darker and more modified tone of colour which architects generally prefer. They can be supplied in lighter or darker shades. Tiles are generally fixed on laths or battens, to a 4in. gauge which gives a lap of 2½in., though it is preferable to use special fixing blocks: 50 tiles cover 1 sq. yd., 550 one square of 100ft super. and 1,800 one rood. Where roofs of different pitches intersect, the laths or battens should not intersect also, as the sharper pitch of roof requires a closer gauge. Care should be taken to avoid this error, as otherwise it will be found necessary to strip the laths off he sharper side. Tiles are usually torched (pointed) on the underside with hair-mortar after fixing, and although each tile has holes or nails, nailing is unnecessary. The tiles being approximately ½in. thick, the tails orm a surface which distributes the sweep of he wind during a gale, and as there is no everage a tiled roof will be found intact when roofing of other material is stripped. The tails or lower part of tiles should not be bedded in mortar, as the capillary attraction of lime for moisture causes expansion and consequent risk of damage. Tiles being a lay product do not readily absorb or transmit eat, thereby giving an equable temperature o rooms, being cool in summer and warm n winter; and boarding (sarking) is not so ssential for tiles as for other kinds of roofing materials. When, however, cost is not of rimary importance, boarding adds to the eneral excellence of the roof. Tiles the size of tile-and-half, also half-tiles, are supplied to break joints at gables. Some prefer the latter as having a neater appearance when fixed. Messrs. Stanley Brothers make a short tile 7in. long for a double course at the eaves, and a tile 9in. long to fix immediately under the ridge. Hip and valley tiles are stocked having the contained angle across the hip or valley for slopes of roofs, as well as several patterns of unequal-sided tiles for intersecting roofs of different pitches.

Stuart's Granolithic.

On Saturday afternoon a party of about fifty members of the Sanitary Inspectors' Association (including Mr. Isaac Young, the chairman, and Mr. T. G. Dee, the treasurer) paid a visit to the works of Stuart's Granolithic Stone Co., Ltd., at Millwall Dock. Mr. Peter Stuart personally conducted the party over the works and was very hospitable with his "Cumarachandhu"; while a Highlander made angel music on the pibroch. The members, after visiting the offices and testing-room, were shown the Gates American crusher, where the Dalbeattie granite is reduced to about ¼in., passing between three sets of rolls and being fed by conveyors. After grinding it is mixed with the cement (from Strood) in a worm mixer where the proper quantity of water is added automatically. The material is then moulded in wooden boxes as desired and allowed to set. Special attention was directed to the Granolithic fireproof floors, which are only 3in. thick; small steel rods are embedded in the slabs to take tensional stress. Walls are also formed of Granolithic slabs. Notice was taken of a fireproof staircase and landing which, though only 2½in. thick, will withstand great strain. The works at Millwall Dock are thoroughly up-to-date, electric power being used for driving—the grinding mill is driven by a 60 h.p. motor. A contract for 300 tons of Granolithic work has just been completed by the firm in competition with America, and a very large number of electric street-box covers is being completed for the General Post Office authorities. Some of them were shown to the party, who were interested to see how the full moulds were machine-shaken to get rid of all air-bubbles, so securing a thoroughly homogeneous slab.

"Arrolithic" Mosaic.

The feature of "Arrolithic" marble mosaic, terrazzo and cloisonné pavement is that strips of metal are embedded on edge which prevent the spread of cracks in large areas. The metal is introduced as part of the design, and therefore is not obtrusive: it can be simple or elaborate, and takes the part of the "cloisons" in enamel work. Messrs. Mainzer & Co., of 18, Berners Street, London, W., who work in this new process, have just issued a coloured sheet of very pleasing designs, the cost of which varies according to the intricacy of the work. Architects will doubtless be glad to avail themselves of so useful a check to the spread of cracks.

Marmorite.

A new decorative material is being introduced by the Marmorite Artistique Syndicate, Ltd., of 30, Great St. Helen's, Bishopsgate, E.C. As manufactured originally in Germany it was purely a representation of black marble, but the present composition can be produced in any colour and dealt with artistically for pilasters, fascias, walls and many other purposes. The Marmorite now introduced is a Belgian manufacture, the works being situated at Brussels, where a large business is being done. The material is a by-product of glass with a certain proportion of metal salts; when the material is in a molten state the colouring ingredients are added, so that the colour is therefore not merely a surface colour but extends throughout the substance. It is claimed that Marmorite is less brittle than glass, that it retains its brilliant polish and is unaffected by changes of temperature. The designs for decorative and other purposes are made by the sand-blast process, the painting being done by hand and varnished. Marmorite has already found favour with traders for advertising purposes, many of the specimens exhibited last week at the Trocadero Restaurant having been specially manufactured for the well-known firms whose designs and advertisements appeared upon them.

The Design of Pianos.

Those architects who sometimes design the furniture of a house will find much to interest them in the admirable new catalogue of Messrs. John Broadwood & Sons, Ltd., of 33, Great Pulteney Street, London, W. Twenty-four pianos are illustrated. The first design, modern French, is especially refined, while those in the style of Louis XV. and XVI., Chippendale, Sheraton and Adam are also very beautiful: another fine piano is that after a design by the late Sir Edward Burne-Jones. We notice, too, a piano designed by Mr. Baillie Scott and one by Mr. Ashbee.

New Companies.

MARNER CO., LTD., manufacturers of bricks, tiles pipes, &c., 26, Bermondsey Wall, S.E. Capital: £10,000 n 20 founders' shares of £100 each and 8,000 ordinary shares of £1 each.

RAYLEIGH BRICK AND TILE CO., LTD., brick and tile manufacturers, lime burners, cement manufacturers, builders, &c., Rayleigh, Essex. Capital: £10,000 in £5 shares.

FOREST HALL BRICK CO., LTD., brick and tile manufacturers, &c., High Bridge, Newcastle-on-Tyne. Capital: £6,000 in £1 shares (3,000 preference).

YORKSHIRE ELECTRIC TRAMWAYS CONSTRUCTION SYNDICATE, LTD. Capital: £280,000 in 180 preference shares of £1,000 each and 10,000 ordinary shares of £10 each.

Coming Events.

Wednesday, May 6.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. A. Hunter Crawford on "The Building of a House"—VI., 8 p.m.

SOCIETY OF ARTS.—Mr. C. J. Morrison on "The Construction of Maps and Charts," 8 p.m.

ROYAL ARCHÆOLOGICAL INSTITUTION.—Prof. W. Boyd Dawkins on "The Pre-Roman and Roman Roads of South-Eastern England," Mr. Talfourd Ely on "A Roman Lighthouse," 4 p.m.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—Meeting at 4.30 p.m.

BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.—Ordinary Meeting at 8 p.m.

Thursday, May 7.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—Mr. H. Beaumont on "Pictorial Imagination expressed by Snapshot Drawing." Mr. George Weymouth, F.R.I.B.A. in the chair.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.—Mr. C. E. Stromeyer on "The Choice of Steam Boilers," 8 p m.

CHEMICAL SOCIETY.—Meeting at 8 p.m.

SURVEYORS' INSTITUTION.—Meeting at Leinster House, Dublin, at 10 a.m.

SOCIETY OF ANTIQUARIES.—Meeting at 8.30 p.m.

IRON AND STEEL INSTITUTE.—Annual Meeting at 10.30 a m. at the Institution of Civil Engineers (first day). Election of Officers and Council. Presidential Address by Andrew Carnegie.

Friday, May 8.

IRON AND STEEL INSTITUTE.—Annual Meeting at 10.30 a m. (second day). Annual Dinner of the Institute in the Grand Hall of the Hotel Cecil, 7 p.m.

Saturday, May 9.

BRISTOL SOCIETY OF ARCHITECTS.—Mr. A. P. J. Cotterell on "Sewage Treatment for Isolated Blocks of Buildings and Country Houses, &c."

NORTHERN ARCHITECTURAL ASSOCIATION.—Visit to Laing Art Gallery and Byker Police and Fire Brigade Station, Newcastle-on Tyne, 3 p.m.

Monday, May 11.

BRISTOL SOCIETY OF ARCHITECTS.—Mr. A. P. I. Cotterell, A.M.I.C.E., on "Sewage Treatment for Isolated Blocks of Buildings and Country Houses &c.," 8 p.m.

Wednesday, May 13.

INSTITUTE OF SANITARY ENGINEERS, LTD.—Meetings of General Purposes and Finance Committee at 4.15 p.m, Election Committee at 5.15 p.m., and Council at 7 p.m.

Complete List of Contracts Open.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	BUILDING:		
May 7	Bethesda, Wales—Lavatories, &c.	——	D. G. Davies, Clerk to the Governors, Bank Chambers, Bethesda.
" 7	Bishop Auckland—Twenty Cottages	Industrial Co-operative, Flour and Provision Soc., Ltd.	F. H. Livesay, Architect and Surveyor, Bishop Auckland.
" 7	Hengoed, Wales—Ten Houses	No. 2 Hengoed Building Club	P. V. Jones, Architect and Surveyor, Hengoed.
" 7	Southampton—Office	Corporation	W. Matthews, Engineer, Municipal Offices, Southampton.
" 7	Wheatley Hill, Durham—Chapel	——	Rev. W. J. Pearce, Wesley Villas, Thornley.
" 7	Bridlington—Rebuilding Shop and Premises	J. Hall	J. Earnshaw, Carlton House, Bridlington.
" 7	London, S.E.—Repairs, &c., to Library	Lambeth Borough Council	H. Edwards, Engineer, Lambeth Town Hall, Kennington Green.
" 7	London, W.—Schools	Acton School Board	E. Monson & Sons, Grosvenor House, Acton Vale, W.
" 7	Ormskirk, Lancs—Boiler-House and Wards	Guardians	J. Dod, Architect, D 16, Exchange Buildings, Liverpool.
" 8	Hornsea, near Hull—Two Shelters	Urban District Council	W. E. Warburton, Surveyor, Public Rooms, Hornsea.
" 8	Londonderry—Timber Wharf	Port and Harbour Commrs.	A. M'C. Stewart, Engineer, Castle Street, Londonderry.
" 8	Govan, Scotland—Bricks, Cement, &c.	Town Council	T. C. Parsons, Burgh Electrical Engineer, Town Hall, Govan.
" 8	Cattal, Yorks—Inebriates' Home	Yorkshire Inebriates' Act Joint Committee.	J. V. Edwards, Architect, County Hall, Wakefield.
" 8	Cork—Library	County Borough Council	H. A. Cutler, City Engineer, Cork.
" 8	Meelich, Limerick—Alterations, &c., to Church	——	B. E. F. Sheehy, 57 George Street, Limerick.
" 8	Styal—Laundry, &c., Extensions to School	Cholton Guardians	J. B. Broadbent, 15 Cooper Street, Manchester.
" 8	Withington—Residence	Cholton Guardians	J. B. Broadbent, 15 Cooper Street, Manchester.
" 9	East Dereham—Alterations to Workhouse	Guardians	W. M. Barton, Clerk, The Guildhall, East Dereham.
" 9	Londonderry—Cottages	Rural District Council, No. 2	J. J. S. Barnhill, 1A Strand, Londonderry.
" 9	Melrose, Scotland—Infectious Diseases Hospital, &c.	Joint Hospital Committee	G. Monteath, Engineer, Post Office Buildings, Newton St., Boswells.
" 9	York—Engine and Boiler Houses, &c.	Corporation	A. Creer, City Engineer, Guildhall, York.
" 9	Bridlington—Engine-Rooms, Boiler-House, Offices, &c.	Corporation	E. R. Matthews, Borough Surveyor, Town Hall, Bridlington.
" 9	Egremont—Fire Bricks, Retorts, &c.	Wallasey U.D.C.	Manager, Gas and Waterworks, Great Float, Birkenhead.
" 9	Bury, Lancs—Bridge Improvement Works	Corporation and County Council	County Bridgemaster, Preston.
" 9	Bempton, Bridlington—Chapel	Wesleyan Denomination Trustees	S. Dyer, 29 Quay Road, Bridlington.
" 9	Bentham—Chapel and Schools	——	J. F. Curwen, 26 Highgate, Kendal.
" 9	Burtonport and Annagry, Ireland—Church Galleries	Rev. Monsignor Walker, P.P.	E. J. Toye, 20 Great James Street, Londonderry.
" 9	Cwmbran, Wales—Sixteen Houses	Spring Hill Building Club	C. T. Evans, 8 Queen Street, Cardiff.
" 9	Ellenborough, Cumberland—House	——	J. Stobart, 11 Marsh Terrace, Ellenborough.
" 10	Warminster—Renovating, &c., Church	——	Mr. Pope, 32 Market Place, Warminster.
" 11	Barnes—Taking Down Premises	Urban District Council	G. B. Tomes, Engineer, Council Offices, High Street, Mortlake.
" 11	Bradford—Doctor's House	——	W. H. H. Marten, Cheapside Chambers, Bradford.
" 11	Hastings—Additions to Fish-Packing Station	Corporation	P. H. Palmer, Borough Engineer, Town Hall, Hastings.
" 11	Hoylake, Cheshire—Mortuary	Urban District Council	T. Foster, Engineer, District Council Offices, Hoylake.
" 11	Leeds—Rebuilding Hotel	C. Wright	T. Winn & Sons, 92 Albion Street, Leeds.
" 11	Porth, Wales—Enlargement of Schools	Ystradyfodwg School Board	J. Rees, Architect, Hillside Cottage, Pentre.
" 11	Perth—Lime, Cements, &c.	Gas Department	W. B. M'Lusket, Engineer, Gasworks, Perth.
" 11	Penrhiwceiber—Thirty-seven to Forty Cottages	Cottage Co., Ltd	G. A. Evans, Secretary, Ffrwd Offices, Mountain Ash.
" 11	Aberdare—Sixty Houses	Graig Building Club	T. Roderick, Architect, Clifton Street, Aberdare.
" 11	Deptford—Municipal Buildings	Borough Council	W. T. Farthing & Son, 46 Strand, W.C.
" 12	Arklow, Ireland—Masonic Hall	——	S. Stuart, Ferrybank, Arklow.
" 12	Camberwell, S.E.—Public Baths and Washhouses, Underground Convenience.	Borough Council	C. W. Tagg, Clerk, Town Hall, Camberwell, S.E.
" 12	Frodingham—Twenty-nine Cottages	British Steel Smelters, Assn.	R. W. Greaves, Imperial Buildings, 20 Cross Street, Manchester.
" 12	Bristol—Stables	Great Western Railway Co.	Engineer, Bristol Station.
" 12	Bideford—Library and Municipal Offices	Corporation	A. J. Dunn, 86 Colmore Row, Birmingham.
" 12	Birmingham—Extension of Culvert	Public Works Committee	J. Price, City Engineer, Council House, Birmingham.
" 12	London, N.—Conveniences, &c.	London County Council	General Section, Architect's Department, 18 Pall Mall East, S.W.
" 13	Aberdeen—Steading, &c.	——	G. Cocker, Balnahard, Finzean, Aboyne.
" 13	Alnwick—Twelve Houses	North-Eastern Railway Co.	W. Bell, Company's Architect, Central Station, Newcastle-on-Tyne
" 13	Barnet—Alterations to Workhouse	Guardians	White, Son & Pill, High Street, Barnet.
" 13	Downpatrick—Alterations, &c., to Asylum	Down District Lunatic Asylum	Graeme-Watt & Tulloch, 77A Victoria Street, Belfast.
" 13	Pontlottyn, Wales—Alterations, &c., to Inn	——	P. V. Jones, Architect, Hengoed.
" 13	Queenstown—Residence	——	W. H. Hill & Son, 23 South Mall, Cork.
" 13	Fanad Head, co. Donegal, Ireland—Coastguard Station	——	Office of Public Works, Dublin.
" 14	Birmingham—Lodges, Stables, &c.	Corporation	J. Mansergh & Sons, 5 Victoria Street, Westminster
" 14	Walsall—Orphanage Buildings	R.A.O.B. Orphanage Fund	F. W. Mager, Honorary Architect, Walsall.
" 15	Hayle, Cornwall—Two Houses	——	"Royal Standard" Inn, Hayle.
" 15	Truro—Three Houses	Palmer & Cundy	S. Hill, Architect, Redruth.
" 16	Aberdare—Alterations, &c., to Hotel	Markets and Town Hall Co.	Ll. Smith & Davies, Architects, Aberdare.
" 16	Boston, Lincs—Alterations, &c., to School	School Board	J. Rowell, Borough Surveyor's Office, Boston.
" 16	Leeds—Extensions of Nurses' Homes, &c.	Guardians	J. Winn & Sons, 92 Albion Street, Leeds.
	ENGINEERING·		
May 7	Holywell, Flints—Water Works	Rural District Council	C. A. Atkinson, 11 Tithebarn Street, Liverpool.
" 7	Southampton—Reconstructing Quay	Harbour Board	E. C. Poole, Engineer, Town Quay, Southampton.
" 7	Dublin—Light Ship	Commissioners of Irish Lights	O. Armstrong, Secretary, Irish Lights Office, Dublin.
" 7	Uppingham—Waterworks	Trustees of Uppingham School	G. & F. W. Hodson, Engineers, Bank Chambers, Loughborough
" 7	Whyteleafe, Surrey—Gasholder	Caterham and District Gas Co.	H. E. Jones & Son, Palace Chambers, Westminster, S.W.
" 8	Basingstoke—Electric Lighting Lease	Corporation	R. P. Wilson, 66 Victoria Street, Westminster.
" 8	Govan, Scotland—Electrical Stores, Meters, &c.	Town Council	T. C. Parsons, Burgh Electrical Engineer, Town Hall, Govan.
" 9	Lisbon—Metal and Stone Bridge	Ministry of Public Works	Commercial Intelligence Branch, Bd. of Trade, 50 Parliament St, S.W
" 9	Newton-le-Willows, Lancs—Engine House, Cooling Pond, &c.	Urban District Council	C. Cole, Clerk, Town Hall, Earlestown.
" 11	Carnwath, Scotland—Drainage Works	District Committee	Warren & Stuart, 94 Hope Street, Glasgow.
" 11	Gartcosh—Superstructures of Underbridges	Caledonian Railway Co	Company's Divisional Engineer, 16 Killermont Street.
" 11	Belfast—Steam Ferry Boat	Harbour Commissioners	W. A. Currie, Secretary, Harbour Office, Belfast.
" 11	Liverpool—Two Boilers, &c.	——	E. Kirby & W. E. Willink, 5 Cook Street, Liverpool.
" 12	London, S.W.—Tramways Works	London County Council	Engineer's Department, County Hall, Spring Gardens, S.W.

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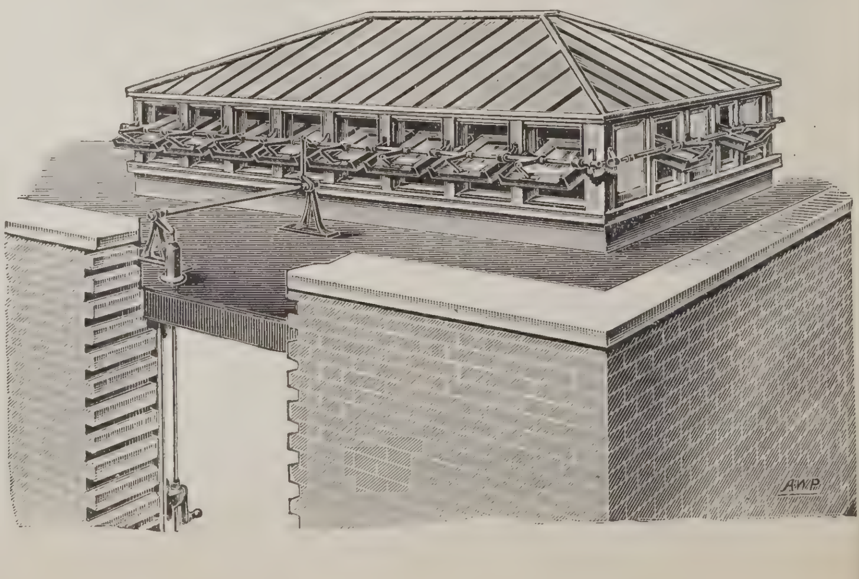

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Complete List of Contracts Open *—continued*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	ENGINEERING—*cont.*		
May 12	Cairo, Egypt—Electrical Power Transmission	Egyptian Government	Public Works Department, Cairo.
,, 12	Wilmslow—Gas Meters, &c.	Gas Co	W. Levers Engineer, Gasworks, Wilmslow.
,, 13	London, N.—Side Entrances to Manholes	Wood Green U.D.C.	C. J. Gunyon, Surveyor, Town Hall, Wood Green.
,, 13	Preston, Lancs—Refuse Destructor	Corporation	Borough Surveyor, Town Hall, Preston.
,, 14	Leicester—Brick and Girder Bridge	Highway Sewerage Committee	E. G. Mawbey, Borough Engineer, Town Hall Leicester.
,, 14	Newcastle-on-Tyne—Brickwork and Steelwork to Bridge	Corporation	City Engineer, Town Hall, Newcastle on-Tyne.
,, 20	London, W.—Sewage Pumping Plant, &c	Urban District Council	E. F. Collins, Clerk, Town Hall, Chiswick.
20	Liscard, Cheshire—Electrical Meters, Switches, &c.	Wallasey Urban District Council	J. A. Crowther, Engineer, Public Offices, Egremont,
June 8	Brighton—Electrical Plant	Town Council	A. Wright, Star Chambers 30 Moorgate Street, E C.
July 1	Rangoon—Electric Supply Undertaking	Municipal Committee	Ogilvy, Gillanders & Co., 67 Cornhill, E.C
,, 1	Penybont, Wales—Sewerage Works	Rural District Council	Burnett & Hurley, 10 Bridgend Rd., Tondu, Aberkenfig, Glamorgan
	IRON AND STEEL:		
May 7	Wolverhampton—Iron Fencing	Guardians	F. Harrison, Clerk Union Offices, St. Peter's Close, Wolverhmptn
,, 7	London, E.C.—Stores	Gt. India, Peninsula Railway Co.	Offices, 48 Copthall Avenue, London, E.C.
,, 8	Pontypridd—Ironmongery, Iron and Steel, &c.	Gas Committee	E. Jones, Gas Engineer, Treforest.
,, 8	Govan, Scotland—Castings, Pipes, &c.	Town Council	T. C. Parsons, Borough Electrical Engineer, Town Hall, Govan
,, 9	Egremont—Pipes, Iron and Steel, &c.	Wallasey Urban District Council	Engineer, Gas and Waterworks, Great Float, Birkenhead.
,, 9	Egremont—Iron and Steel, &c.	Wallasey Urban District Council	Manager, Egremont Ferry, Cheshire.
,, 11	Glasgow—Steelwork Superstructures of Underbridges	Caledonian Railway Co.	Engineer, 16 Killermont Street, Glasgow.
,, 11	Perth—Pipes &c.	Gas Department	W. B. M'Lusky, Engineer, Gasworks, Perth.
,, 13	Stockport—Steel Stanchions, &c.	Gas and Electricity Committee	S. Meunier, Engineer, Gas and Electricity Offices, Portwood.
,, 13	Bradford—Gulleys, Ventilators, &c.	Corporation	J. H. Cox City Surveyor, Town Hall Bradford
,, 14	Freshwater and Totland, I.W.—Castings, Pipes, Manholes, &c.	Isle of Wight R.D.C.	W. B. G. Bennett, Son & Berry, Midland Bank Chrs., Southampton.
,, 16	Leigh, Lancs—Pipes	Gas and Water Committee	J. Gibson, Gas and Waterworks Offices, Leigh, Lancashire.
,, 16	Dundee—Castings, &c.	Water Commissioners	G. Baxter, 93 Commercial Street, Dundee.
,, 20	Hove, Sussex—Ironmongery, Pipes &c	Corporation	H. H. Scott, Borough Surveyor, Town Hall, Hove.
,, 20	Liscard, Cheshire—Firebars, Iron and Steel, &c.	Wallasey U.D.C.	J. A. Crowther, Engineer, Public Offices, Egremont.
,, 22	Spilsby—Tools	Rural District Council	T. A. Busbridge, District Surveyor, Spilsby.
June 15	Bangkok, Siam—Permanent-way Materials	Royal Siamese State Railways	Director-General, Gehots, Bangkok.
,, 15	Bangkok, Siam—Railway Stores	Royal Siamese State Railways	Siamese Legation, London.
	PAINTING AND PLUMBING:		
May 7	Southampton—Painting, &c.	Corporation	W. Matthews, Waterworks Engineer, Southampton.
,, 8	Govan, Scotland—Paints, Varnish, &c.	Town Council	T. C. Parsons, Burgh Electrical Engineer, Town Hall, Govan.
,, 8	Pontypridd—Oils, Paints, &c.	Gas Committee	E. Jones, Gas Engineer, Treforest.
,, 9	Dartmouth—Paint, Oil, &c.	Port Sanitary Authority	O. S. Bartlett, Clerk, Offices, Dartmouth.
,, 9	Egremont—Paint, Oils, Lead-Pipe, &c	Wallasey Urban District Council	Engineer, Gas and Water Works, Great Float, Birkenhead
,, 9	Egremont—Lead-Pipe, Oils, Paints, &c.	Wallasey Urban District Council	Manager, Egremont Ferry, Cheshire.
,, 11	Wanstead—Painting, &c.	School Board	J. T. Brassey, 70-71 Bishopsgate Within, E.C.
,, 11	Perth—Paints, Oils, &c.	Gas Department	W. B. M'Lusky, Engineer, Gasworks, Perth.
,, 11	Stafford—Painting	Health Committee	W. Blackshaw, Borough Engineer, Borough Hall, Stratford.
,, 13	London, S.E.—Painting Infirmary, &c	Guardians	W. Thumall, Clerk's Offices, Brook Street, Kennington Road, S.E.
,, 16	Macclesfield—Painting	Watch Committee	E. E. Adshead, Borough Engineer, Macclesfield.
,, 20	Hove, Sussex—Paints, Varnishes, &c.	Corporation	H. H. Scott, Borough Surveyor, Town Hall, Hove.
	FURNITURE:		
May 11	Halifax—Furniture	School Board	W. H. Ostler, Clerk, Board's Offices, Halifax.
	ROADS AND CARTAGE:		
May 7	Southend-on-Sea—Making-up	Corporation	E. J. Elford, Borough Surveyor, Southend-on-Sea.
,, 8	Chelmsford—Repairing, &c	Rural District Council	H. G. Warne, Surveyor Avenue Chambers Market Rd., Chelmsford.
,, 9	Church, Lancs—Flags, Kerbs, &c.	Urban District Council	W. E. Wood, Surveyor, Church.
,, 11	Hale—Road Works	Urban District Council	T. Blagburn, Surveyor, Ashley Road, Hale, Cheshire.
,, 12	Cricklewood—Wood Paving and Kerbing Works	Willesden District Council	O. C. Robson, Engineer, Public Offices, Dyne Road, Kilburn, N W.
,, 12	Wilmslow—Carting	Wilmslow & Alderley Gas Co.	W. Severs, Engineers, Gasworks, Wilmslow.
,, 13	Bradford—Paving, &c.	Corporation	J. H. Cox, City Surveyor, Town Hall, Bradford.
,, 13	London, W.C.—Wood Paving	Holborn Borough Council	H C. Jones, Clerk, Municipal Offices, 197 High Holborn, W.C.
,, 13	Todmorden—Street Improvements	———	C. R. Pease, Borough Engineer, Town Hall, Todmorden.
,, 14	London, W.—Making-up	Ealing Town Council	C. Jones, Borough Engineer, Town Hall, Ealing, W.
,, 14	London, W.—Kerbing, &c.	Ealing Town Council	C. Jones, Borough Engineer, Town Hall, Ealing, W.
,, 15	Castle Donington, near Derby—Materials	Rural District Council	F. E. Burton, Clerk, High Street, Castle Donington.
,, 15	Rothwell, Northants—Granite, &c.	Urban District Council	W. T. Pearson, Surveyor Market House, Rothwell
,, 18	Stevenage, Herts—Granite	Urban District Council	W. O. Times, Clerk, Council Offices, Stevenage.
,, 20	Hove, Sussex—Granite, &c.	Corporation	H. H. Scott, Borough Surveyor, Town Hall, Hove.
,, 21	Croydon—Making-up	Rural District Council	E. J. Gowen, Clerk, Town Hall, Croydon.
	SANITARY:		
May 7	Derby—Filtering Material	Corporation	J. Mansergh & Sons, 5 Victoria Street, Westminster.
,, 7	Camelford, Cornwall—Sewerage Works	Rural District Council	S. W. Jenkin & Son, Engineers, Liskeard.
,, 8	Brighouse, Yorks—Sewers	Highways Committee	S. S. Haywood, Borough Engineer Municipal Offices, Brighouse.
,, 9	King's Lynn—Sewerage Works	Corporation	H. J. Weaver, Borough Engineer, Town Hall, King's Lynn.
,, 9	Willington Durham—Sewage-Disposal Works	Urban District Council	J. E. Parker, Post Office Chambers Newcastle-on-Tyne
,, 9	Egremont—Stores	Wallasey U.D.C.	Manager, Egremont Ferry, Cheshire.
,, 9	Bridgend—Sewerage Works	Ogmore and Garw U.D.C	H. D. Williams, Council Offices, Blackmill, Bridgend, Glam.
,, 11	Carnwath, Scotland—Drainage Works	District Committee	Warren & Stuart, 94 Hope Street, Glasgow.
,, 11	Hale—Sewering	Urban District Council	J. G. Whyatt, Clerk, Ashley Road, Hale, Cheshire.
,, 11	Romford—Sewerage, &c., Works	Urban District Council	H. T. Ridge, Council Offices, Romford.
,, 12	Nuneaton—Sewers	Urban District Council	J. C. Cook, Engineer, Council Offices, Nuneaton.
,, 12	Richmond, Surrey—Lime, Sulphate of Alumina, &c	Main Sewerage Board	W. Fairley, Engineer, West Hall Road, Kew Gardens, S.W.
,, 13	Bradford—Pipes, &c.	Corporation	J. H Cox, City Surveyor Town Hall Bradford.
,, 13	Neston, Cheshire—Sewerage Works	Urban District Council	Knowles & Russell, 5 Castle Street, Liverpool.
,, 13	Drighlington—Sewerage Works	Urban District Council	J. Waugh, Engineer, Sunbridge Chambers, Bradford.
,, 14	Freshwater and Totland, I.W.—Sewerage Works	Isle of Wight R.D.C.	W. B. G. Bennett, Son & Berry, Midlnd. Bnk. Chbrs., Southampton.
,, 14	Winslow Sewers, &c.	Rural District Council	H. A. Johnson, 15 The Exchange, Bradford, Yorks
,, 16	Harrogate—Sewers	———	E. W. Dixon, 5 Prospect Crescent, Harrogate.
,, 15	Stone, Staffs—Sewerage Works	Rural District Council	J. B. Norris, 21 High Street, Stone.
,, 20	Hove, Sussex—Drain Pipes, &c.	Corporation	H. H. Scott, Borough Surveyor, Town Hall, Hove.
	TIMBER:		
May 8	Pontypridd—Timber	Gas Committee	E. Jones, Gas Engineer, Treforest.
,, 8	Govan, Scotland—Timber	Town Council	T. C. Parsons, Burgh Electrical Engineer, Town Hall, Govan.
,, 9	Egremont—Timber	Wallasey U.D.C.	Manager, Egremont Ferry, Cheshire.
,, 11	Rhyl—Creosoted Post and Rail Fencing	Urban District Council	L. G. Hall, Water Engineer, Council Offices, Rhyl.
,, 13	Bradford—Timber	Corporation	J. H. Cox, City Surveyor Town Hall, Bradford.
,, 18	Dublin—Sleeper Blocks	Gt. Northern Rly. Co. (Ireland)	T. Morrison, Secretary Amiens Street, Dublin.
,, 20	Hove, Sussex—Timber	Corporation	H. H. Scott Borough Surveyor, Town Hall, Hove.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
May 13	Stockton-on-Tees—Girls' High School	£25, £15 10s.	——	C. J. Archer, 77 High Street, Stockton-on-Tees.
,, 30	Gillingham, Kent—Public Swimming & Slipper Baths	£20, £10, £5.	——	F. C. Boucher, Clerk to Gillingham U.D.C., New Brompton, Kent.
June 18	Limerick—Library and Museum	£75, £25.	——	W. M. Nolan, Town Clerk, Town Hall, Limerick.
No date	London, E.C.—Essays on Prevention of Inconvenience in Road Repair.	£105, £31 10s., £21.	——	W. P. Neal, Pinner's Hall, Old Broad Street, London, E.C.

THE

BUILDERS' JOURNAL

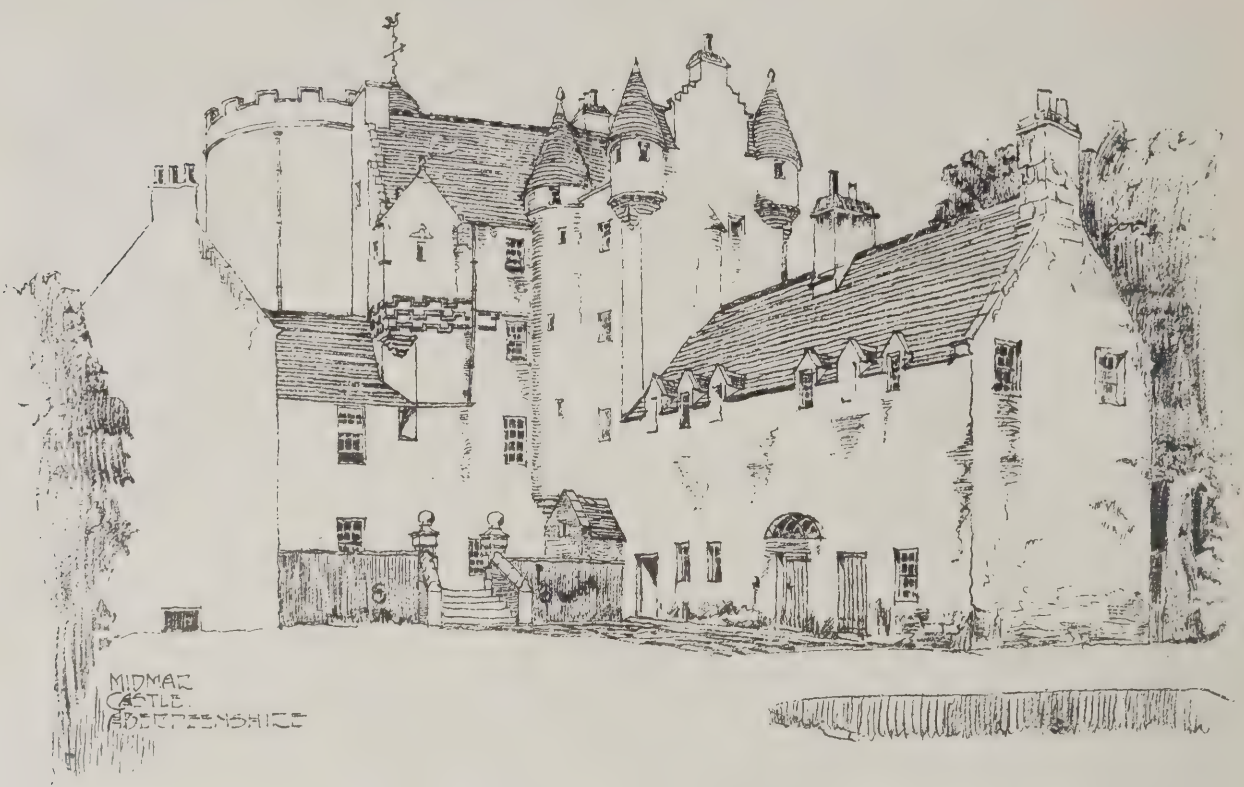
AND ARCHITECTURAL RECORD.

May 13, 1903. Vol. 17, No. 431. 9, East Harding Street, E.C.

The Strand "Island." MR. HAMO THORNYCROFT'S suggestion about the widening of the Strand in connection with the new street is certainly one that merits attention, though we fear it will not be adopted by the Council. As set out, the frontage line of the "island" site juts awkwardly into the Strand at its eastern end. Mr. Thornycroft proposes that this corner should be cut off. The two chief advantages are of course that the Strand would be made a uniform width of 130yds. at that part, and going eastwards the vista would have the church of St. Clement Danes in the centre and the line of the Law Courts to the left. In the small plan published by the "Times" we notice Mr. Thornycroft has made the Strand look a good deal narrower at the end of Aldwych than it really is: but we must grant him some allowance to emphasize a difference. "I am confident," he says, "that unless the line of the north side of the street is thrown back as suggested the general effect of the 'improvements' at this point will be a constant eyesore; not a crookedness which is picturesque, but an unfortunate crookedness, yet one which, happily, there is still time to avoid." To cut off the "island" corner as proposed, reducing the frontage to the new crescent by about 60ft, would naturally be sacrificing considerable revenue: but we trust the Council may still see their way to do this.

Not a Vandalism. WE are glad to see that some of those responsible for the scheme have come forward to explain that the proposed erection of a Carnegie free library next to Shakspeare's birthplace at Stratford-on-Avon will not encroach on the world-famous dwelling nor be a disturbing element in the street. Mr. Edgar Fowler, chairman of the Trustees' executive committee, says the cottages (which are modern) are not to be pulled down to make way for the library but to extend the garden and isolate the house from danger by fire, and, further, that the library itself is not to be a "palatial modern structure" but "the careful restoration of an ancient but dilapidated and wretchedly-modernized house and the filling-up of a vacant piece of ground adjoining the School of Art (a space caused by a fire) with a building suitable for its purpose and situation." Mr. Robert Sydney Laffan, formerly headmaster of King Edward's Grammar School at Stratford, has also come forward with some satisfying particulars. He explains that the garden eastwards from the birthplace is 37ft. 6in. wide to the cottages with which the Library and School of Art Committee propose to deal. By pulling down the four nearest an additional 45ft. will be added to the garden. Of these four cottages the two nearest the birthplace, which were formerly one house, were entirely reconstructed about the first half of the nineteenth century. The front and back are quite modern, the only old portions being one upright timber built into the wall at the back, and the lower part of an old chimney. The next two cottages are absolutely modern structures. Next to these stands the only house which has any antiquarian interest. It is at present occupied as a china shop, and presents from the front the appearance of a modern red-brick building; but it was originally a timbered structure of the Tudor period, and of this original building some fragments still exist. The two gable ends and some of the lower parts of the chimneys remain, and one old room still shows in a partition the massive timbers of sixteenth-century construction. The overhanging timbered front of the original building has unfortunately disappeared and been replaced by a common 9in. brick wall. When the property came into the possession of the committee, Mr. J. A. Cossins (the architect appointed by the Society for the Protection of Ancient Buildings) was called in to advise as to the treatment of this house. At first Mr. Cossins reported that owing to the dilapidated and combustible condition of the property a complete rebuilding would be necessary; but after going very carefully into the matter he came to the conclusion that a part at least of the remaining ancient timber-work was capable of preservation. It is hoped that when modern additions have been removed sufficient indications of the ancient roof and timbers may be found to guide the architects in making such a reproduction as shall preserve the character of the house. The committee propose to carry out this reproduction, and to build on the vacant plot to the east of this house a low two-storeyed building of similar character (which we trust will be solid and not packing-case work) covering the exposed red-brick wall of the School of Art, and presenting to the street a timbered front. We notice that the matter was brought up in the House of Commons last Thursday by Mr. Yoxall, who also asked the First Lord of the Treasury whether he would consider the advisability of appointing a committee "to enquire into the propriety of establishing a national trust for the consecration of buildings of historical or biographical interest within the United Kingdom." Mr. Balfour said he was not clear how this was to be done, nor of the precise meaning of "consecration." If it was to include purchase, compulsory or otherwise, by the State of all buildings now in private ownership which are of historical or biographical interest, the scheme seemed to him to be impracticable. If it fell short of this it would hardly be efficacious.

The Solution of the Labour Problem. WHILE Mr. Carnegie's name is concerned with the library at Stratford we find it also connected with a far more important matter, namely, as the newly-elected president of the Iron and Steel Institute and the address which he delivered before that body on Thursday last. Mr. Carnegie dealt with the relation of capital to labour and the desirability of giving the actual producers a share in the profits. So far as the building trade of this country is concerned, it is hardly feasible just yet that such a scheme could be carried out, but long since there have been rumours of great firms amalgamating, and with the capital then combined some scheme of profit-sharing might be tried. It is not ill-considered socialism, as the results in the American steel trade show very plainly. The Carnegie Steel Company found it good policy to take in forty young partners—business men – who are now rich: but they also found how much depended on the mechanical men, the superintendents and foremen. To one of these Mr. Carnegie offered a partnership, but he preferred to be left as he was—"and just give me a thundering salary." Mr. Carnegie gave him the salary of the President of the United States, and looked about for other men equally capable. From that time onward the union of the mechanical and business partners went steadily forward, until no manager of a mill was without his interest in the business, as pertaining to the position, and no board of management or important committee was without a mechanical representative. The United Steel Company, the largest of all industrial corporations, found it to their interest to adopt a joint-stock scheme with shares in small amounts, easily distributable among thousands of workmen: and it is this co-interest to which Mr. Carnegie looks so hopefully for the future—when it shall be the rule that the workman is partner with capital, the man of affairs and the working man both owners in the shares and equally interested in the success of their joint efforts.



SCOTTISH DOMESTIC ARCHITECTURE.

THE CULMINATING PERIOD.

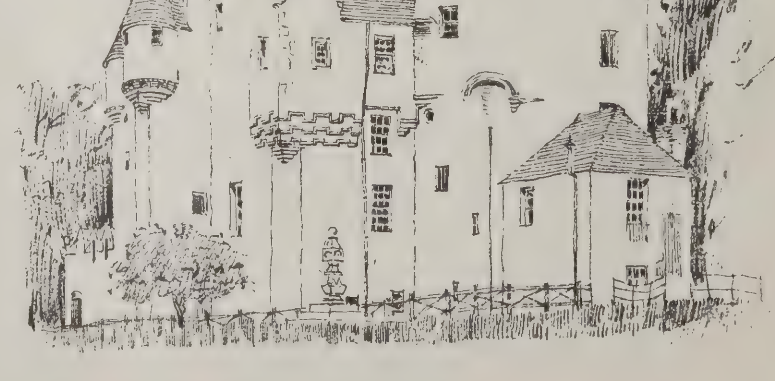
By **ANDREW ROLLO.**

THE castles here illustrated, with the exception of Aboyne, are all of what has been termed the culminating phase of the Scottish domestic style, dating from about the middle of the sixteenth century to the latter end of the seventeenth—that phase which gradually gave place to the Renaissance, of which some features, notably the balustraded parapets and ogee turrets, are early apparent. The castles are in some cases fortified, having loopholes for musketry, though they retain all the features of the earlier periods of the style, such as corbelled parapets and overhanging turrets. The development of such features may clearly be traced throughout the progress of the style; the general impression that French influence is shown is considered by some authorities to be erroneous. The castles are, however, built with much more regard to the comfort of the inmates than previously, being often profusely decorated in the "halls," and other parts; and externally, notably in the case of the later part of Drum, a simple, dignified and domestic character is imparted to the architecture.

The plans, of **L**, **Z** and other forms, are entirely peculiar to Scotland. The angles, both internal and external, are frequently corbelled out and utilized as the usual spiral staircases, which are invariably carried up as circular turrets. These spiral stairs, however, in some few later examples, give place to the more convenient and more commodious straight stairs.

The Aberdeenshire castles are generally built of granite rubble, in some instances rough-casted on face, and this greatly accounts for their peculiar simplicity of detail. It may be observed that the richness of design is mostly concentrated towards the top, though it is found that each particular structure is of one date. This concentration of detail may be accounted for by the continued necessity for defence, and by the fact that some castles were encircled by a courtyard in which were erected the offices, and by a turreted wall as a further measure of defence.

It is evident that Professor Kerr (*vide* "The English Gentleman's House") was quite mistaken as regards the true inwardness of Scottish architecture, and must have been acquainted only with those heavy and crude examples of the modern revival of the style in the early part of last century, when he states that "the Scottish baronial style," as it is commonly designated, "is especially an uncivilized style, and ought never to be brought into juxtaposition with anything more highly cultivated than the beautiful heather-braes of Loch Lomond or the fir-woods and birch-covered banks of the Dee"; and, again, that "the ornamental character of the style is simply uncivilized, and must be considered as such." But the Professor is good enough to allow that "in Scotland the style may be accepted on traditional grounds, or even admired as in harmony with much of the scenery of the country." Professor Kerr's knowledge of the style might be illustrated by comparing the later part of Aboyne, which is more or less heavy in character, with the earlier part, which, though solid and dignified, certainly cannot be called crude.



GOVERNMENT BUILDINGS.

A Corps of Constructing Engineers.

A PAPER on this subject was read by Capt. John Sewell, Corps of Engineers, U.S. Army, at the last Annual Convention of the American Institute of Architects held at Washington. Capt. Sewell said :—

Probably everyone here present will accept it as axiomatic that the design and erection of Government buildings should proceed according to some well-studied and businesslike system. This should be broad enough to cover the reasonable requirements of every individual case, yet sufficiently well defined to ensure always the maximum economy and efficiency ; it should also ensure the placing of both responsibility and credit for all work where they properly belong.

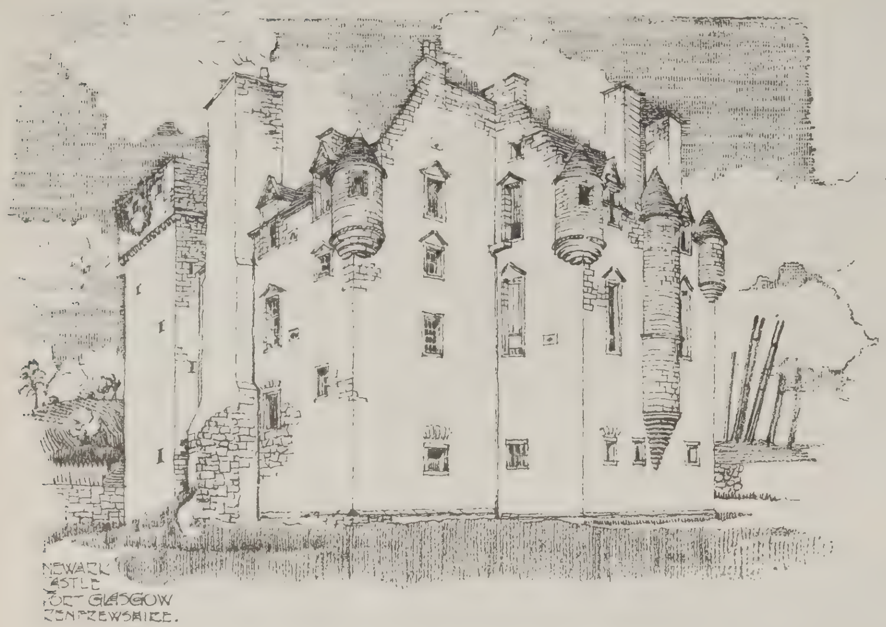
That there is no existing system of general application is amply demonstrated by the history of Government buildings everywhere, both completed and building. Certain departments of the Government which have considerable building work to do proceed in a more or less systematic manner ; yet not one of them adheres always to its own general methods, and certainly no two of them handle the work in even approximately similar ways. Possibly one reason why the problem has not been definitely solved before this is that it is capable of more than one solution, and is, to that extent, indeterminate. However, there must be some one solution that is better than any other, and there seems to be abundant evidence that it is yet to be found. There is much complaint on the score of artistic merit or structural excellence or economical execution in many of the buildings erected under any of the existing systems ; while most of those which escape adverse criticism have been handled in some special way not susceptible of general application.

In what follows it is not claimed that this best solution is necessarily to be found ; it is only an indication of lines along which the writer believes a system could be developed capable of handling all cases likely to arise in ordinary practice with reasonable satisfaction to all concerned.

Inasmuch as both architects and engineers have much to do with the design and erection of modern buildings, and neither can do entirely without the other, it would seem to be a matter of prime importance that they be definitely settled in their proper relative positions in the beginning. This is a matter of more importance in Government work than in private work, because of its greater extent under one ownership. The writer's plan, without elaboration of details, is simply this : The engineer should be a Government official, with authority to disburse funds and make contracts ; the architect should be in private practice. The architect, selected in some proper way, should in general be responsible for the design of the building, and the Government through its own engineers should erect it. If the Government could develop a corps of salaried architects, with sufficient artistic ability, it would be manifest economy to do so ; but the very nature of the case seems to make this impossible, and there is undoubtedly a very general sentiment that a " plan factory " is not conducive to the highest artistic excellence in building design. With this sentiment the writer is in thorough accord so far as artistic features are concerned, though he believes that a well-conducted " plan factory " is an excellent thing when it comes to structural and other engineering work ; so that he would always advocate the retention of a good architect in private practice for the design of a Government building. He would for all important work limit the selection to architects of well-proven ability. But on less important works the competitions, or methods of selection, should be so devised as to give the younger men a chance to win if they can. It is not necessary to go into details on this point, since this paper is merely an expression of opinion on the part of an individual, and not a probable basis for official action.

Now, coming to engineers, there is no doubt that by a proper system of selection and tenure of office the Government could get an abundance of competent engineers at moderate salaries to look after the execution of its building work. These men could easily be trained so as to do away entirely with the general contractor, and even with many of the sub-contractors, at a financial profit to the Government and with considerable improvement in the standard of work. They would also be in a position to standardize many of the features of building design, which are now sadly in need of it. For instance, among the many so-called systems of fireproofing on the market some leave little to be desired, some are very good, some fair and many are wholly bad. A corps of building constructors employed by the Government would be in a position to definitely settle which were wheat and which were chaff, and draw the line between them.

FYVIE
CASTLE
ABERDEENSHIRE.



Certain column-sections are structurally good, others structurally bad; under present conditions quite a percentage of the latter find their way into Government buildings. The same is true of other details in all lines of building work, and this could be corrected by a construction-corps such as that now suggested. Above all, such searching inspection could be provided that the standard of workmanship would be materially raised. Contractors would be forced to learn that good work can be executed as cheaply as bad, and it is not too much to claim that the general elevation of the standard on Government buildings would exercise a similar and much-needed influence on private work. A corps of building constructors or well-trained and competent engineers could therefore determine the best type for the various structural features of different classes of buildings; they could standardize specifications for both workmanship and materials; they could prepare the engineering plans themselves, if that proved advisable, or, if not, they would at least, by the results of their investigations with the resources at their command, greatly simplify the architect's work on all but the purely artistic parts of the design. They would make all the contracts, control the various contractors, and be responsible that the approved design was properly and economically executed. But the architect's duties should so far overlap those of the constructing engineer that it should be his province to consult with the engineer on all points affecting the artistic value of the building, and on these points his authority should be superior to that of the engineer, except in those cases that occasionally occur where an effect is mistakenly sought at the expense of sound construction. In any event, the engineer, if he happens to take a narrow view of the artistic, should not be allowed to spoil the design, any more than a general contractor in a similar position.

So far the advantages of the proposed arrangement seem to be mainly on the side of the Government. It may be claimed that a competent architect and an honest contractor could take a Government building on the same terms as a private one, and execute it with economy and a high standard of workmanship. This is perfectly possible but by no means certain, because the contractor is often a very uncertain quantity, and must in any case have a profit, most of which could be saved by the method here outlined.

It is almost certain that the average engineer, if left entirely to himself in the design and execution of a building, would produce at least a few architectural absurdities; possibly, as an engineer, the writer may be so bold as to suggest that he has seen evidence that very good architects are sometimes a little weak on the purely engineering features of their work, as well as the relative economy of different details that are otherwise equivalent. He might possibly further suggest that it is here the engineer should come in; and if the architect has the benefit of the serious thought of many well-trained engineering minds, instead of only one or two, the result is much more certain to be good. This is at least a fair argument for the architect and a regularly organized corps of constructing engineers, as against the architect and a clerk of the works or engineer in private practice employed by the architect to supervise a particular building.

In any event, in Government work the money must be expended according to law and regulations, and every penny accounted for with a rigidity almost unknown in private work. Contracts must be made in accordance with a mass of statutes, rules and decisions that bewilder anyone not brought up among them. Any reasonable and necessary thing can be done if one knows the established method of doing it, but, regardless of what the object may be, if the act is not in due form payments will be stopped and contracts declared illegal by the accounting officers of the Treasury; contractors will not get their money, and the architect will probably feel that the tangle is utterly hopeless. The money must be disbursed by some Government official; if the architect has the supervision of the work, and certifies the payments due to the contractor, the disbursing-officer will probably be a man entirely without a technical knowledge of building, and it may be quite possible for him and the architect to disagree as to whether a given payment is actually due under the contract. Unless the architect were bonded and held financially responsible for the payment, he could not compel the disbursing-officer to make it in such a case, and it might result in tying up the work. The path of the uninitiated, in incurring liabilities and making disbursements on behalf of the Government, is beset with pitfalls such as those indicated above; travelling expenses, award of contracts under the law relative to the lowest bidder, employment of expert help—in fact, every step from start to finish, even the architect's commission, is liable to make him wish he had never heard of a Government building. Of course, if the disbursing-bureau is always in a broad and friendly frame of mind these difficulties will be smoothed out, and the architect may never dream of their existence; but such a system could be entirely upset by a very little personal or professional jealousy, and it seems to the writer that this possibility

should be removed. He feels confident that the division of responsibilities suggested in this paper would remove it.

Naturally, a good many questions of detail will at once be raised in considering the probable workings of any proposed new system. Possibly it may be worth while to raise one or two now and attempt to answer them.

It may be asked: If this building-bureau *personnel* is made up entirely of engineers, who will decide between the various architects in a competition? Who will upon the artistic merits of the designs? There should be a board of, probably, three eminent architects in private practice, retained to advise the constructing-bureau in such matters, and their decision on artistic questions should be final. Of course, no one directly or indirectly interested in the competition should be eligible for membership on this board. The building once awarded to an architect or firm of architects, they should be left entirely untrammelled in their work; the writer thinks this is more certain to follow if the constructing-bureau is avowedly not composed of architectural experts. A little advice from the board of consulting architects should be a sufficient check on the design, if any is needed.

Inasmuch as architects, like the rest of mankind, are dependent for their existence upon a certain amout of the things that only money can buy, the question of compensation may also be raised. It is assumed that if the architect prepares all the plans and specifications, the usual percentage for such work would be a proper commission; it ought to be more liberal under the system here outlined than any other, because so much of the engineering and structural design would be covered by the standard details and specifications of the constructing-bureau. Fewer drawings would be required, and the specifications would demand not more than one-fourth of the usual amount of attention.

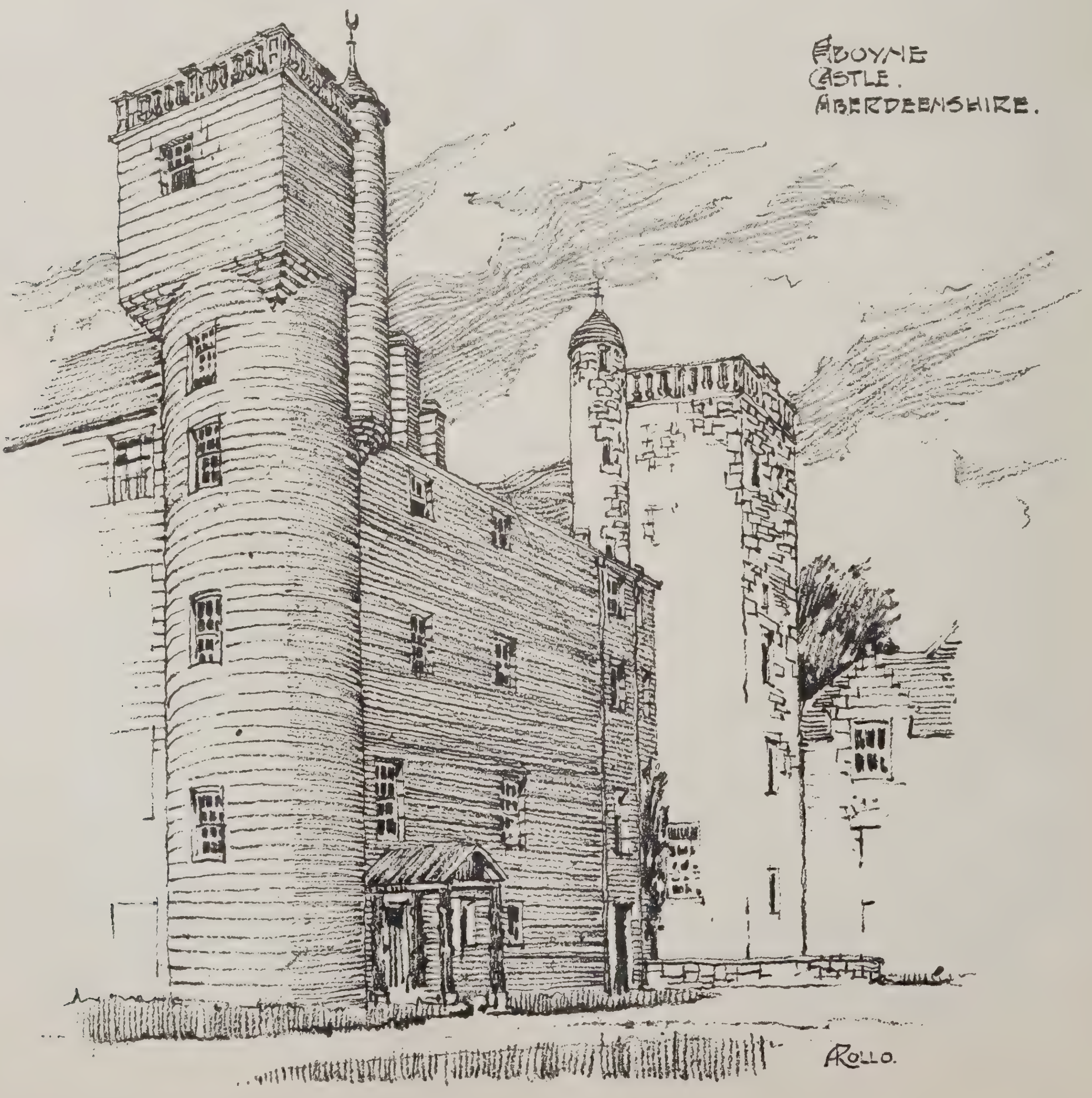
In case the constructing-bureau did away entirely with general contractors, as the writer thinks it should, there would be a very decided economy in having the drawings for the steam, sanitary and electrical work, and also for foundations, structural features and fireproofing, made by its own draughtsmen; in this case the drawings could be made to serve at once as a basis for contracts for materials, as well as to interpret the design. The writer thinks this

might be arranged with justice to all concerned by having the architect supervise the preparation of these drawings, and paying him the full commission less only the usual cost of such drawings to the architect himself. If this is not satisfactory, some arrangement could be devised whereby the Government could secure this economy in the preparation of the drawings and yet not be niggardly with the architect. Possibly, to make the nature of the proposed economy plain, the writer should explain that his idea of the best way to let Government contracts is to get unit prices on carefully classified and accurately scheduled bills of quantities. This puts the proposition before all bidders in the plainest and simplest form, encourages the lowest possible figures, and secures bids in many cases from responsible parties who have not the time to survey the drawings for themselves. It also provides automatically for extras, since they can always be paid for, under the contract, within the limit of variations allowed in the quantities. It requires that the quantities shall be accurately figured from the drawings, and this can be done while they are in course of preparation, practically without extra cost, if the work is organized from the start with that end in view; whereas if done afterwards it sometimes costs almost as much as the drawings themselves. In any event, if it were always accurately done by the Government, it would not have to be done many times over by all the bidders; this would reduce the cost of bids as well as the percentage of contingencies on the contract itself, and, if generally understood, would reduce the cost of the work to the Government.

Probably other minor questions of detail would be raised and would have to be met; but the writer has no doubt whatever that if he has succeeded, even partially, in answering those suggested above, all the others could be disposed of without any trouble.

THE FIRE EXHIBITION.

THE International Fire Exhibition at Earl's Court was opened by the Duke of Cambridge on Wednesday last, when a great many foreign representatives were present. Besides the usual fire exhibits on the numerous stalls several loan collections of photographs, drawings, &c., are shown, and materially add to the interest of the exhibition. The German exhibit is especially interesting. We hope to publish a special illustrated supplement dealing with the exhibition within the next few weeks. On Wednesday evening at the Criterion Restaurant the Executive of the British Fire Prevention Committee entertained at dinner the foreign fire chiefs and surveyors, Mr. Edwin O. Sachs presiding, and Mr. Ellis Marsland, hon. secretary, occupying the vice-chair. The toast of the evening, given from the chair, emphasized the vital importance of the fire-preventive side of fire protection and the great work which was being specially done in that direction by some of the foreign fire chiefs present; this toast was responded to by Count Kamarowsky (Russia) and the chief officers of Berlin, Hamburg, Bremen and Ghent. The toast of "The Visitors," proposed by Mr. Marsland, was responded to by Sir Vincent Barrington (Metropolitan Asylums Board), Councillor Bamberg (Berlin Corporation), Mr. P. Cremieu-Javal (chairman of the London Exhibitions) and Lieut.-Colonel Fox (London Salvage Corps). The toast of "The Fire Service" given by Mr. Max Clarke, was responded to by Firemaster Pordage, of Edinburgh and the hon. secretary of the National Fire Brigades' Union. Through all the speeches ran a current of conviction that greater stress must be laid on fire-prevention even than upon fire-extinguishing, and that the Committee's work in this direction was already bearing tangible results. On Thursday evening Councillor Bamberg, of Berlin, and the chief officers of the fire brigades of Berlin, Hamburg and Bremen entertained the members of the Executive of the British Fire Prevention Committee at a dinner held at the Café Royal, Regent Street, W.



Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Robing-Room to a University Hall.

GLASGOW.—GRAFTON writes: "For what purpose is the robing-room used as an accessory to a university hall? Does it require special fittings of any description?"

It is simply a dressing-room, with lavatory accommodation, hat pegs and chairs, where the Fellows and other officials can put on their robes before proceeding to the platform or stage.

Books on Carving and Woodwork.

GLASGOW.—ENQUIRER writes: "Are there any books on carving?"

"Hints on Wood-Carving for Beginners," by Eleanor Rowe (1s.); "Details of Gothic Wood Carving," by Frank A. Crallan (£1 3s.); "Ecclesiastical Woodwork," by T. Talbot Bury (8s. 6d.); "Examples of Wood-Carving from the XV–XVIII Centuries," by A. Roeper and H. Boesch (£1 10s.). These can be obtained from Mr. B. T. Batsford, 94, High Holborn, W.C.

Rough-cast: Oak Gate-post.

COVENTRY.—CONSTANT READER writes: "(1) Is the face of the brickwork in the accompanying illustration (not reproduced) rendered in cement and afterwards painted in the ordinary way, or distempered? (2) I fixed four oak gate-posts twelve months ago and left them rough: ought not they now to be oiled and the cracks filled in?"

(1) The brickwork is cement rough-cast, made and used as explained on p. 440 of our issue for January 9th, 1901. (2) We do not advise anything to be done to the oak except to protect the top of the post by covering it with another piece of wood to prevent the rain soaking in. The cracks cannot be remedied. African oak is the best to use for outside work.

A Leaky Lantern Light.

IPSWICH.—CYRIL CATCHPOLE writes: "The accompanying drawing (not reproduced) is a full-size detail section of a lantern light to a billiard-room. The roof is a concrete flat covered with asphalt, and the asphalt has been dressed up around the deal curb and tucked into the oak sill. But the lantern light leakes considerably when it rains. The water drops from underneath the pitch-pine condensation moulding. I have therefore had the moulding taken down at one end. I thought at first there was a faulty joint between the asphalt plinth and the oak sill, so I had a fillet of red lead put on to make a tight joint, after which a lead flashing was dressed on top of the oak sill and tucked into the water check, and a red-lead joint made. The lead was also dressed about 2in. on to the asphalt flat with a loose joint and just raised where opposite the condensation outlet. The water, however, still continues to get in. How can I remedy matters?"

You should examine further whether, owing to a shake or other defect in the pitch-pine, it is possible for rainwater to reach the bolt hole of the bolt which binds the steel joist, curbs and oak sill together. It is possible (if the bolt is an easy fit for the hole through the oak sill) for water to reach the joint in this way as shown by the red line on your drawing. If you are satisfied that the work is secure here, the next thing to examine is the glazing. Rainwater is often blown up by wind in considerable quantities between panes at the laps. These spaces may be kept filled with water by capillary action, and wind-pressure from the outside will make the water overflow on the inside. It might be supposed that this water should escape like condensation water, and so it does; but does condensation water escape? What kind of joint is made between the ½in. lead-pipe outlet and the lead gutter on the pitch-pine moulding? Condensation water and water from the glass has (*a*) a chance of entering the pitch-pine sill through sash-bar mortices; (*b*) the joint between the pitch-pine sill and oak sill (this does not appear to happen); (*c*) the joint between the oak sill and deal curb (I think the defect is here). I assume from the expression "when it rains" you take it for granted that it is the outside rain which actually comes in: it is, however, to be considered that condensation is most considerable when it rains if there is a supply of moist warm air inside. But I judge from the data given that, whether rainwater actually comes in or merely increases the rate of condensation, the remedy is the same. If there is considerable condensation this will tend to keep the woodwork constantly moist and ready at all times, on the slightest provocation, to conduct water by capillarity—the supply is made continuous either by puffs of wind or by gravity. The skylight should have ample ventilation, which should be constantly promoted in dry weather by whoever has charge of the place. If you consider my general suggestions you may discover defects which have hitherto escaped your notice and which have obvious remedies. In the meantime I suspect the joint between the edge of the lead condensation gutter and the oak sill, and the joints of the ½in. lead pipe with the gutter. There is no magic dealing with the business; it is a matter for careful examination, discovery and remedy. P.

Drawings for the National Competition.

BELFAST.—PERPLEXED writes: "(1) What kind of measured drawings are required for the National Competition—rough or finished? (2) If finished drawings done in the school from the actual measured sketches were sent without the latter, how would that affect the competitor? (3) Would the headmaster's certificate be sufficient evidence that the competitor had actually measured the work?"

(1) Only finished drawings are required to be sent. (2) Sending measured sketches does not affect the award. (3) The work is taken as having been done under the supervision of the master (where the student is a registered student), and his certificate should be sufficient.

Buildings to Measure around Barnsley.

BRADFORD.—JORDAN writes: "Kindly name some buildings within eight or ten miles of Barnsley suitable to measure."

Roystone Church, 5 miles from Barnsley, is a very interesting church (Decorated and Perpendicular) erected by the monks of the Cluniac priory of Monk Bretton. There is an almost perfect list of vicars of Roystone from 1234, when Richard de Wallington was instituted on the presentation of the prior. The church has a very peculiar feature, of which only one other is believed to exist in England, viz., a chamber with an oriel window half way up the tower on the west side. It was probably made either to hold a light as a beacon for the guidance of the monks from the monastery to the church or for reading and meditation. There are some well preserved frescoes over the chancel arch, and a singular monument to Sandford Nevile, 1172. Darfield Church, also 5 miles from Barnsley (Decorated and Early English), is well worth a visit on account of its details, especially the Decorated tracery of the south aisle and clearstory windows. At Monk Bretton, 3 miles from Barnsley, there are a few remains of a Cluniac priory with a good Perpendicular gatehouse. M.

St. Margaret's, Westminster.

LONDON, S.W.—J. A. E. writes: "Kindly give a brief account of St. Margaret's Church, Westminster. I wish to measure part of it for the Board of Education examination."

St. Margaret's Church, Westminster, was founded in 1064 by Edward the Confessor. It was rebuilt in the reign of Edward I., but was reconstructed two centuries later in the Perpendicular manner. At this time the level of the churchyard was considerably lower, and the church was approached by flights of steps. There were chapels to SS. Margaret, George, Catherine, Erasmus, John and Cornelius. The position of these is not known with certainty, nor the extent of the chancel, which has probably been curtailed in length. In the reign of Elizabeth the stained glass, stallwork, screens and frescoes were destroyed, but the church received in exchange "the queene's armes in coolers and sundrie pewes." After the appropriation of St. Stephen's Chapel by the House of Commons, St. Margaret's Church was regarded as the chapel of the House, and in 1650 a Parliamentary grant of funds was made for structural alterations. Similar grants have been made since. In 1735 the church was repaired at the national expense, the tower being faced with Portland stone and heightened by 20ft. The tower is now 85ft. high and contains ten bells. In 1758 the parishioners purchased the present east window, perhaps the most celebrated in London. It was painted at Goude in Holland for Henry VII.'s chapel, but that monarch having died before its completion it was presented by his successor to Waltham Abbey. The last abbot of Waltham took out the glass from his church in 1540 and sent it for safety to his own chapel at New Hall, Essex. Here it survived the dangers of the Reformation and passed into the possession of General Monk, who, to preserve it from Puritan bigotry, buried it in the earth. At the Restoration it was replaced, only to become endangered by the decay of the mansion and chapel. It was purchased by a Mr. Conyers, of Copt Hall, whose son sold it to the parishioners of St. Margaret's for 400 guineas. The dean and chapter of the abbey then instituted a lawsuit against the parishioners on account of the "superstitious image or picture," but after seven years judgment was finally given in favour of its retention. The window illustrates the Crucifixion, but contains also full-length figures of SS. George and Catherine, Prince Arthur (Tudor) and his wife Catherine of Aragon. The east end of the church was now (1758) made internally apsidal (semi-hexagonal) and a chancel arch formed, and this arrangement continued until Sir Gilbert Scott's restoration in 1877–78. At this time the galleries and pews were removed, the organ (hitherto at the west end) re-erected at the east end of the north aisle, the west window reopened, the tracery of the clearstory windows renewed, the plaster ceiling removed, and a new oak roof erected, together with reredos, credence table and other fittings. Since then stone-vaulted porches have been built at the east and west ends (? Somers Clarke, architect) and the church so enriched with monuments and stained glass that Sir Charles Barry's proposal for its removal is not likely to be revived. There are memorials to Caxton, Raleigh, Milton, Admiral Blake, Phillip Brooks, W. H. Smith, Lords Frederick Cavendish, Sherbrooke and other celebrities. Architecturally the most interesting monument is that to Marie, Lady Dudley, a late Elizabethan tomb of gilded and painted alabaster with effigies. There is a celebrated epitaph by Pope and a less known one by Whittier. F. H. M.

Measuring Paintwork of Window.

Quæro writes: "How is the paintwork measured inside and outside respectively in the following cases:—(*a*) a double-hung window, top and bottom sash in one square only; (*b*) the same, but top and bottom sash in four squares each, or more or less, as the case may be?"

(*a*) This would be measured as No. 2 on sash-frames (one for each side) and No. 4 on squares (two for each side). If the sash-frames are over 24ft. super. describe as "large," and if over 36ft. super. as "extra large." If the squares are over 2ft. super. describe as "large." and if over 4ft. super. as "extra large." (*b*) The last description will apply to this. Casement windows would be measured in the same way. If the frames have mullions or transoms, describe them as in so many lights, *i.e.*, with one mullion and one transom would be in four lights; or, as an alternative, describe the frame as "with one mullion and one transom." In the case of bays it is well to take each side as a separate window, with an extra quantity (added to the superficial work) for the large angle mullions where they occur. The edges to opening casements are "numbered." W. E. D.

Boundary of Property: Adjoining Owners.

Worcester Park.—H. H. writes: "A purchases a plot of ground from B, who owns the land on each side. B, having to erect a fence (according to conditions of sale), has done so with the posts and rails on A's side. Is this right? I have always understood that the rule is to drive the nails home, which would mean taking the fence down and reversing it. If so, can A compel B to do this? B has also erected a house right up to the boundary of his site and opened windows in the flank wall overlooking A's ground. As A may possibly want to build up to his boundary, has he a right to block up B's windows?"

Firstly, with regard to the fence. You are quite correct in thinking that the supports of a fence should stand on its proprietor's own land, that the boundary line should be the face of the rails or boards, and that the nails should be driven home. Therefore, if B is bound by the contract to erect the fence on his own land, he has evidently not only misplaced it but has constructed it the wrong way round. Secondly, with regard to the house. According to your sketch and description B has encroached upon A's land not only in the points mentioned but also no doubt in the footings of his flank wall and the sills of his windows (if these latter project at all). Unless, therefore, all these points have been dealt with by clauses in the conveyance or "contract and conditions of sale," A has the right to call upon B to remove the fence and the overhanging portions of his building and himself to block up all the windows which open on to his plot, of course taking care that the obstructions are properly supported on his own land and not affixed to B's property. I presume from the sequence of events stated in the enquiry that B's house was not built when A bought his plot. A may, if he chooses, enter into a written agreement with B to pay a nominal rental for all these encroachments and for the rights of light, but it would be much more satisfactory in the long run if the properties were not so mingled, and I think B should agree to give A the few inches on the further side which he has abstracted from him on the near side and to brick up his windows at once. I advise A to write to B formally setting out all the points mentioned, and to express in general terms his willingness to settle the matter by friendly arrangement. Should B prove unreasonable A should at once consult his solicitor—for preference the gentleman who acted on his behalf when he purchased the land originally. G. S. M.

Bricks and Mortar.

Aphorism for the Week.

The Romanesque is a convert, a pagan turned monk. It was not born Catholic as the pointed arch was; it only became so by baptism conferred by the Church.—J. K. Huysmans.

Our Plates.

The proposed Seacroft Golf Links Hotel is to be a red-brick building up to the first-floor level, above which it will be rough cast, and with a "modelled" wood cornice, which will be painted white, the roof being covered with hand-made strawberry-coloured tiles. The accommodation provides not only the ordinary hotel accommodation, but also a small golf club, with the necessary dressing-rooms, &c. Messrs. Brewill & Baily, FF.R.I.B.A., of Nottingham, are the architects.—The house "Juniper Hill," now building, stands on the brow of the hill overlooking the Weald of Surrey, above Reigate Heath Surrey. It is of rough-cast, with a green Westmorland roof. The ornamental plasterwork outside and in is being done by Mr. George P. Bankart, of Bromsgrove. Messrs. Bushby & Son, of Reigate, are the builders, and the architect is Mr. E. Guy Dawber, of London.

The Walls of Avignon.

We are glad to hear that there is still some prospect of the preservation of the walls of Avignon. The French Government has made barracks of the Papal Palace, cutting out the pointed windows, for sanitary reasons, and, which perhaps is kind, covering those frescoes which survived the brutality of the soldiers—with whitewash. Then a political person, M. Pourquery de Boisserin, who had become *maire*, tried to curry favour with the ignorant of his electorate by demolishing the mediæval ramparts, among the most beautiful and best preserved of their period in existence. He attacked two of the gates, but, happily, he has now been defeated at the elections and is ousted from his office. They have in France a Ministry of Fine Arts which might have prevented this sort of thing.

German Art.

Prof. Reinhold Begas, the foremost living German sculptor and the Kaiser's favourite, whose resignation from the Royal Academy of Art was so unexpected, has confided to an interviewer that his reasons for so doing were not only those of advancing age and stress of private work. "I resigned because the people of the Academy want a plasterer and not an artist. I am too old to labour with beginners and infant classes, and have work of more importance to engage my time. I ought to hesitate in expressing my opinions regarding what is styled in certain circles 'modern German art,' for my opinions are not complimentary to certain people, and would no doubt give offence. Germany is acknowledged to stand first among musical nations of the world, but the less said of German art the better."

Discoveries in Crete.

The excavations begun towards the close of last season at Hagia Trias, near Phæstos, on the southern coast of Crete, by Professor Halbherr, have been resumed this spring under the direction of M. Hatzidakis, the ephor of antiquities at Candia. At this spot Professor Halbherr made the very interesting discovery of another Mycenæan palace similar to those at Knossos and Phæstos. The palace is conjectured to have been the maritime residence of the kings of Phæstos, for the sea, which is now about two kilometres from the site, has probably receded considerably since Homeric times. The recent excavations have revealed a large structure containing the usual hall for men, another hall for women, baths and store-rooms. No cisterns or water-pipes have yet come to light. Among the bronze objects recovered are several statuettes, votive effigies of oxen and goats, a spearhead, and ten double axes of the usual Cretan type, together with two small votive double axes. Nineteen talents of bronze, in the shape of rectangular plaques, have also been found; these apparently served as standard weights, or were employed in commercial transactions. A large amount of pottery has also been recovered. The excavations, which were suspended during the Easter holidays, will shortly be resumed.

Old Manchester Town Hall.

The Free Reference Library in King Street, Manchester, which, by the sale of the Piccadilly site, is to be demolished, is the old Manchester Town Hall. It was begun in 1822 and cost nearly £40,000. The designs were prepared by Mr. Francis Goodwin, a London architect. The style of architectur was said to have been "derived from th Temple of Erectheus at Athens, and th dome in the centre was modelled on th octagonal tower of Andronicus, generall called the 'Tower of the Winds.'" Originall there was a group of statuary over the fron of the building "emblematical of the tow of Manchester, with figures representin Commerce and Trade." This, however, ha long since been removed. The groun floor was used for the accommodation the police, and offices for the town beadle and comptroller. The large room on th second floor, 130ft. long by 38ft. wid which is now daily occupied by its hun dreds of readers, was in its original for quite an imposing chamber. Its fine pr portions, with the massive fluted pilla and the central dome, remain, but the schen of decoration is hidden by the great boo presses that line the walls. The decoratio of the hall was undertaken about 1830. the summer of that year a Mr. Aglio, artist of London, was introduced to a Ma chester gentleman, "a warm admirer of t fine arts." In the course of conversation t subject of fresco-painting was brought and "the propriety of adapting this elevat style of art for the embellishment of the pr cipal room of the Town Hall was suggest in preference to the common mode of hou painting." The authorities approved idea, and Mr. Aglio undertook the wo Manchester was incorporated in 1820. that year the present entrance hall and sta case were constructed, and alterations w made in the hall itself by which a coun chamber was provided. Until the old h was vacated, in 1877, for the new town h in Albert Square practically the whole the municipal business was conducted wit its walls.

A Council Discussion.

At last week's meeting of Blackpool Town Cou Councillor Hampson d attention to the new Technical School c petition, for which premiums of £100 been offered; but the conditions were that only twelve designs were submit and he moved that the matter be refe back. Alderman Grimer said that of twenty-six architects in the district only accepted the conditions. Alderman H stated that Councillor Hampson was w in his assertions. The Committee all a had desired to have an assessor to advise t upon the various designs. What the architects objected to was that the Comm of the Council should reserve to thems the right to decide which design shoul accepted. Alderman Mather remarked architects objected to enter for competi unless there was some assurance that successful competitor should carry ou work. Eventually the amendment withdrawn.

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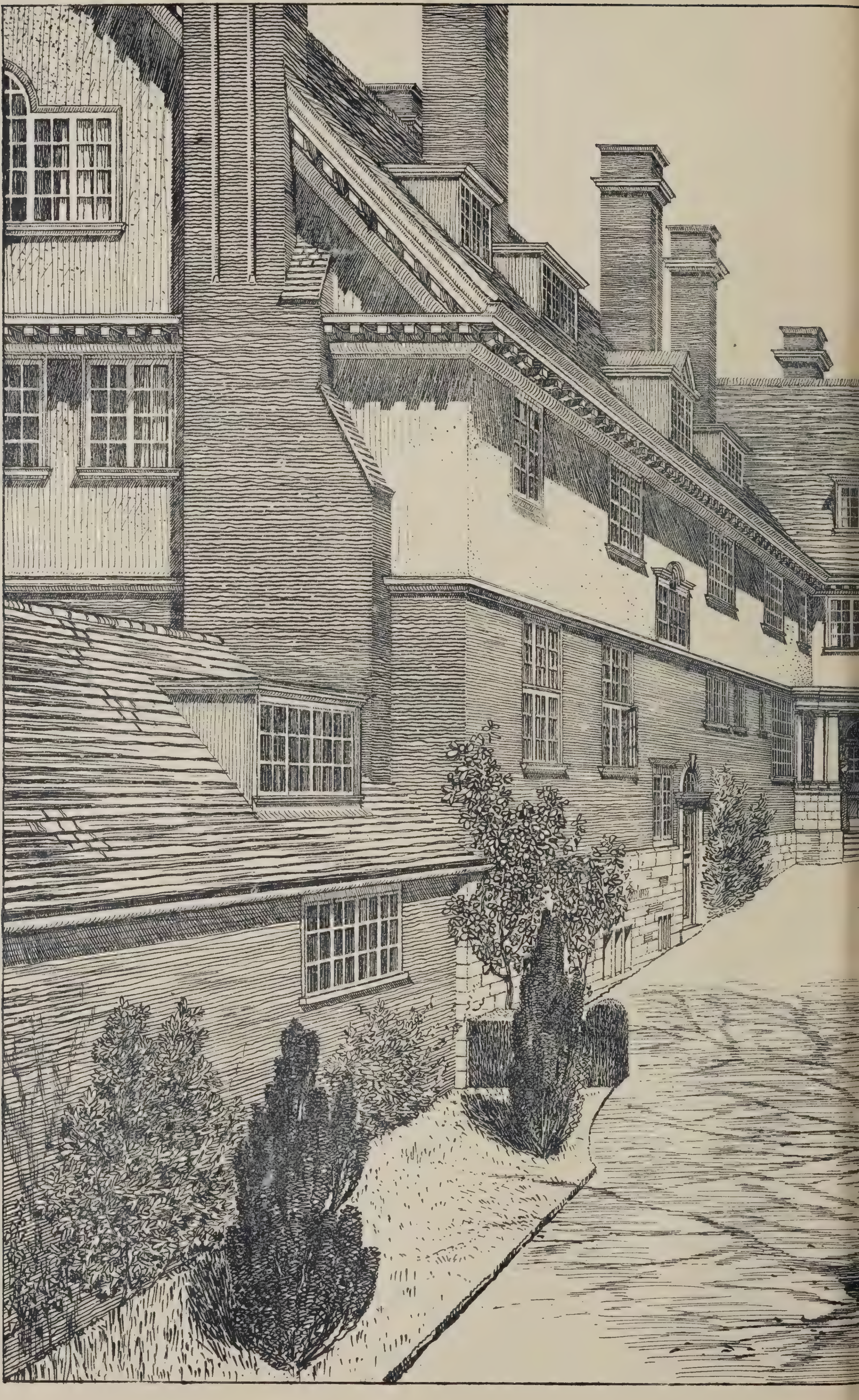

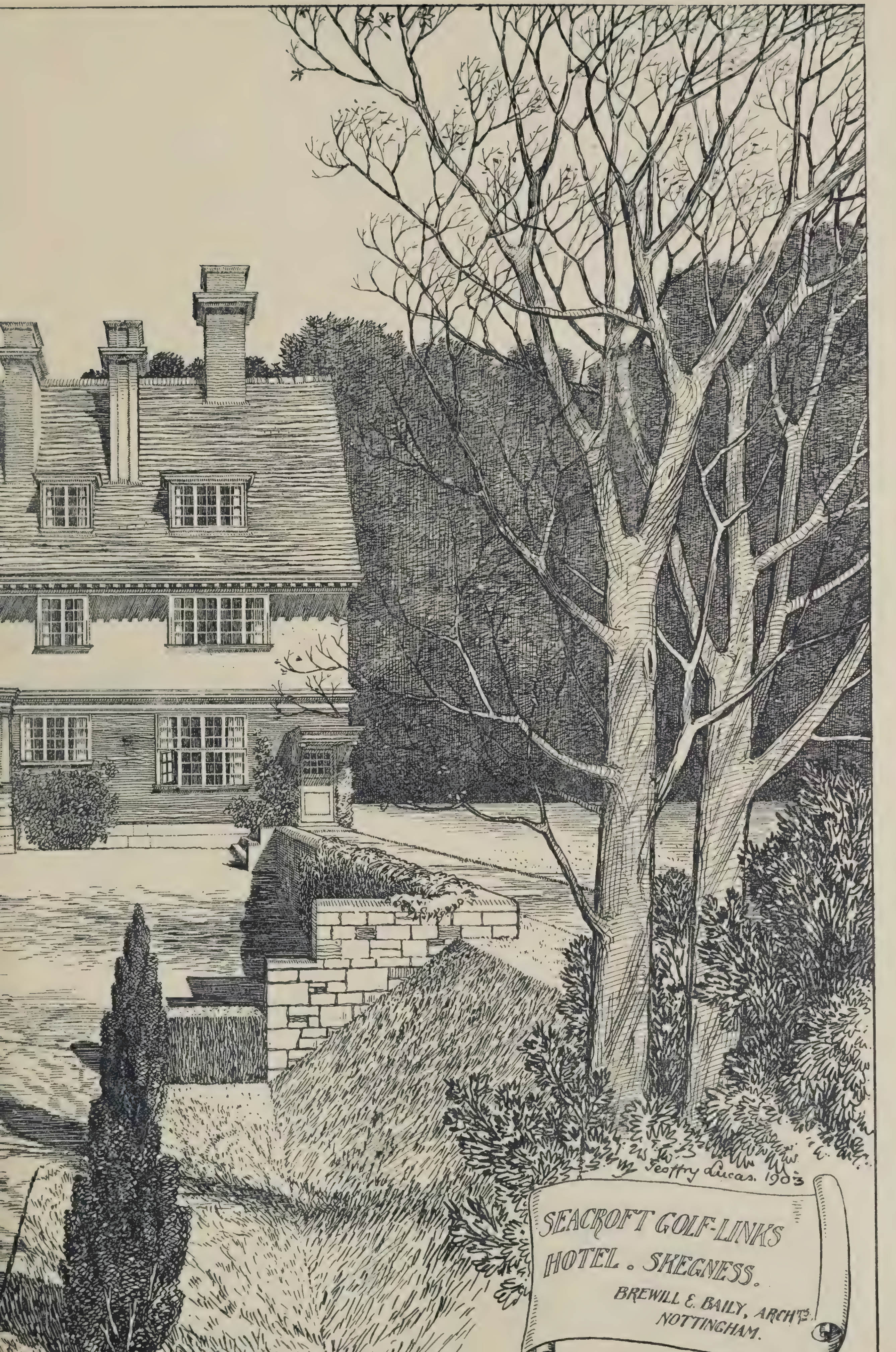

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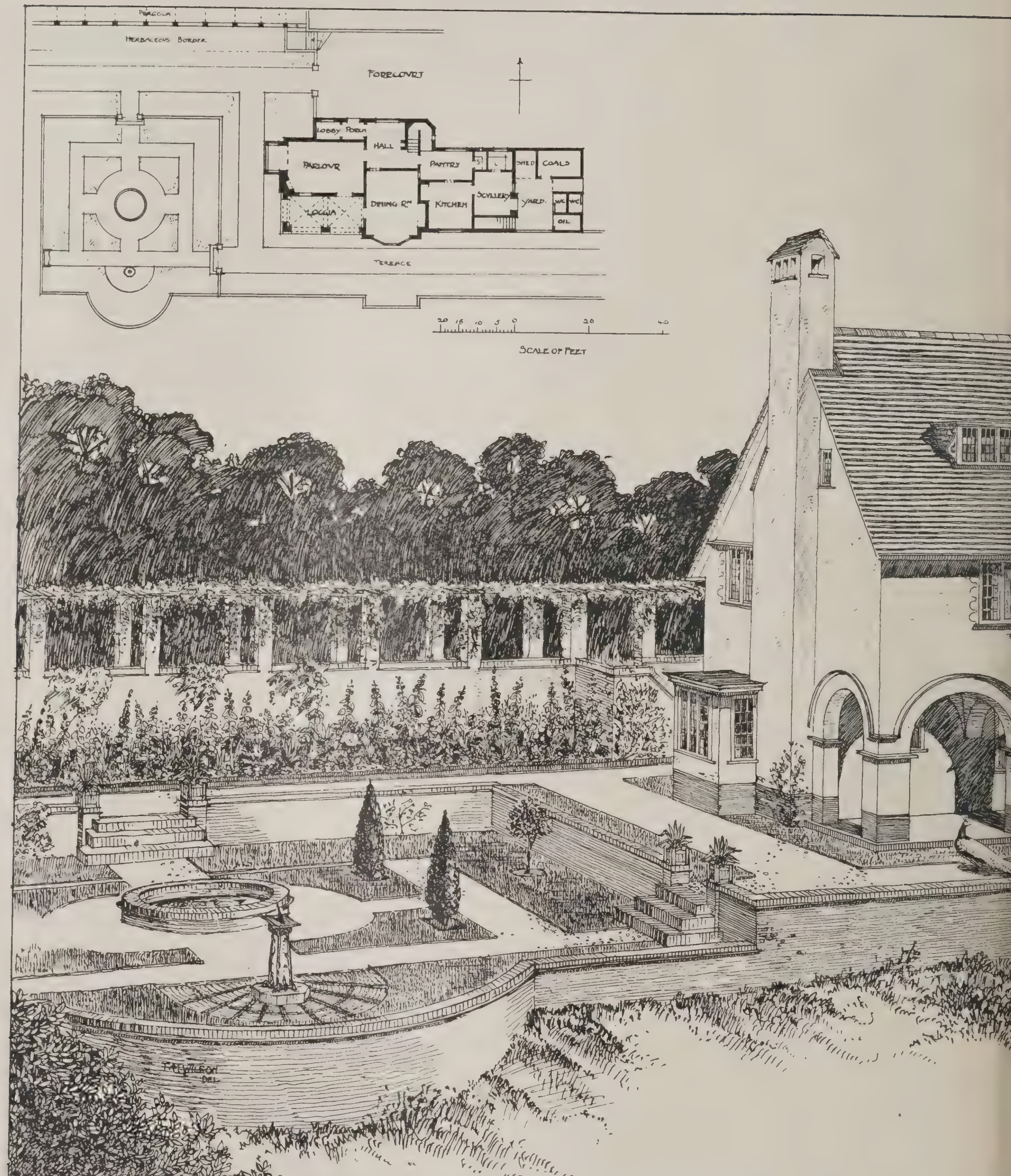
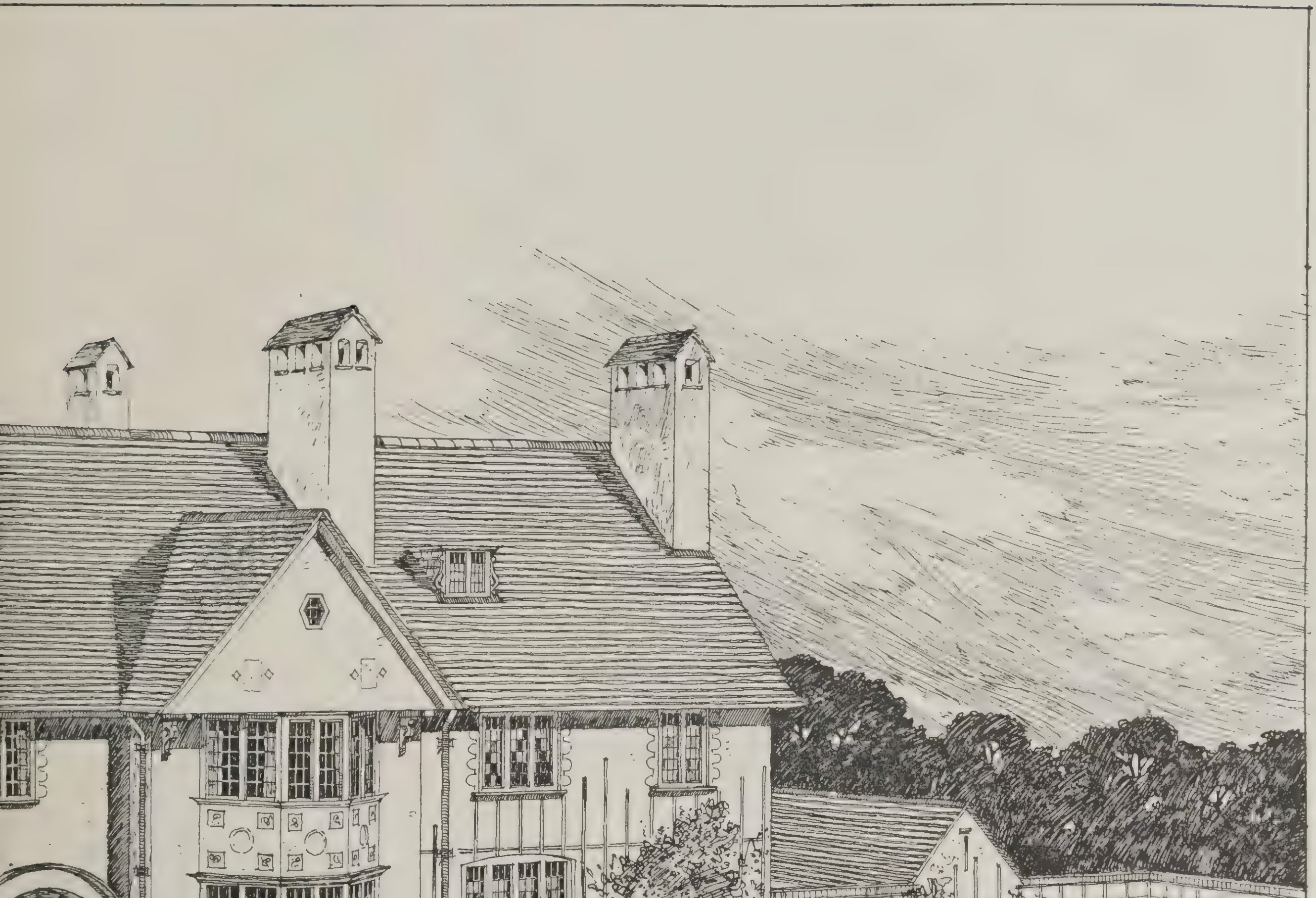


Juniper Hill, Surrey.



UY DAWBER, ARCHITECT.

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Construction Notes.

Rubble Masonry. THERE are a number of points which require attention in the employment of rubble masonry. Of course, rubble consisting of small or irregular pieces of stone does not produce such a homogeneous wall as ashlar, and precautions are therefore taken to overcome this as much as possible. Rubble walls are built of stones generally less than 9in. deep, of irregular shaped blocks in random rubble and squared blocks in coursed rubble. The most common defects in rubble masonry are (1) the stones are not brought to an even bearing; (2) large vertical openings are left between several stones; (3) a considerable height of wall is laid up dry, with only a little mortar on the face and back, mortar then being poured upon the top of the wall; (4) insufficient cement, or cement of poor quality. The vertical joints should be carefully filled with mortar. The actual bed of stones must be closely observed, just as much as in ashlar. Binders or through stones should be used in all courses and the angles constructed of cut or hammer-dressed stone. Long binders or bond stones should not be used in extra thick walls, as they are then liable to fracture, but headers should be used going through about two-thirds of the thickness, crossing each other alternately. Spalls have often to be used to keep stones level in course by raising corners, and unless the mason places the spalls so that the stone rests firmly—that is, does not rock—it will work loose, particularly if subject to shock. Footings of undressed rubble should not be built with lime-mortar, as it gives. They are better built dry or with cement-mortar. The stone used for rubble walling, or irregular and internal walling of any sort, is usually a local thinly-bedded one. Random rubble s often built dry in rough walls, *i e.*, without mortar, and should then be protected by a weatherproof coping of dressed stones, or of stones set on dge in mortar, or by tiles.

Decorative Tiling. TILES for decorative purposes, now largely used for lavatories, bathrooms, sculleries, theatres, hospitals, swimming baths, fireplaces, &c., are usually made from ⅜in. to ½in. thick, and in ll sizes, though the stock sizes are quares of 6in., 5in., 4½in., 4in., 3in., in., 1½in. and 1in. Longitudinal and iagonal half-tiles are almost always made in every kind except hand-ainted varieties. The tiles should ave good keyed backs. Before fixing, ll old plaster should be entirely removed. The tiles should be bedded n neat Portland cement on a backing onsisting of Portland cement and and (1 and 1) laid on in the same anner as an ordinary rough coat of aster. The pointing is usually done Parian cement (though Portland is ften used) tinted to the colour of the les, care being taken to wipe off any ment on the face of the tile. Too uch stress has been laid upon fine ints in tilework, but there is no ecial disadvantage in a ½in. joint as gainst an ⅛th or ¼in. joint, and a ide joint often secures a most pleasing fect, not endeavouring to appear an bsolutely plane homogeneous surface, hich tiles, by their nature, can never ve. For resisting heat in stoves special tiles are made of a clay of loose physical texture, which allows of expansion by sudden heating.

H. K. D.

The Campanile of Westminster Roman Catholic Cathedral, a reproduction of which we are able to publish through the courtesy of "The Sphere," is 284ft. high and 30ft. square. The cross on the top is 10ft. high.

THE CAMPANILE OF WESTMINSTER ROMAN CATHOLIC CATHEDRAL.

FALLACIOUS CEMENT TESTS.

AT the last meeting of the Society of Engineers a paper was read on "Certain Vexatious and Fallacious Cement Tests now in Vogue" by Mr. D. B. Butler, vice-president.

Want of uniformity in the method of carrying out the most ordinary tests was first referred to as a cause of frequent vexation and friction. The simple matter of fineness was often in dispute owing to the different thickness of wire employed in the sieves used for testing. In England there was no agreement on this point, but in America and on the Continent the uniform standard adopted was that the thickness of the wire should be one-half the width of the opening. Examples were given of the varying results obtained with different thicknesses of wire, and the author stated that in order to bring his practice into line with the majority of the cement-using community he had abandoned the Faija standard and adopted the American and Continental standard.

The most glaring example of a vexatious and fallacious test was the "marmalade pot" test for free lime or unsoundness, in which it was assumed that the evolution of heat during setting denoted the presence of free lime. A quotation from a recent paper by the author, published by the Institution of Civil Engineers in 1898, showed the fallacy of this test. As, however, it was still being enforced in many cases, causing an immense amount of unnecessary friction between the engineer and the manufacturer, and in some instances no little expense to the latter, further examples of its misleading character were given from the author's daily practice. The results conclusively demonstrated that the rise of temperature was entirely due to the heat evolved by the crystallizing action of setting, and that therefore a slow-setting cement evolved little or no heat, while a quick-setting cement might show a rise of 20 or 30 degs. and yet withstand every known test for soundness. The results further demonstrated that not only did the evolution of heat during setting not indicate free lime or unsoundness, but, what was more to the point, the evolution of no heat was no guarantee of soundness, several samples which evolved no heat being utterly unsound and absolutely worthless. Nor could it be asserted that because a cement showed a rise of temperature of 15 or 20 degs. that it was therefore too quick-setting for general use. Many cements did not commence to set, and therefore evolved no heat, for about 15 or 20 minutes from the time of adding water (which was slow-setting enough for most classes of work), and then proceeded to set and crystallize rapidly, sometimes causing a rise of 20 degs. in less than as many minutes. The author therefore strongly urged that the temperature test should be discarded as a vexatious and fallacious test.

While recognizing the fact that special kinds of work necessitated special kinds of cement, the following standard specification was put forward as ensuring a good sound cement suitable for most classes of work, and obtainable from any first-class manufacturer.

The whole of the cement shall be

pure Portland cement, and shall conform to the following tests:—

Fineness of Grinding.—To be such that, when sifted through a standard sieve having 50 holes per lineal inch, there shall not be more than one-half (½ per cent.) by weight of residue; when sifted through a sieve having 76 holes per lineal inch, there shall not be more than five (5 per cent.) of residue; and when sifted through a sieve having 100 holes per lineal inch, there shall not be more than twelve (12 per cent.) of residue.

Time of Set.—A pat of neat cement gauged with the minimum of water at the normal temperature (60 degs. Fahr.), and placed on a glass or other non-porous slab, shall not commence to set in less than eight minutes, or take longer than five hours to set hard.

Soundness, or Freedom from Expansion and Contraction.—A pat submitted to moist heat and warm water in the Faija apparatus for soundness at the usual temperatures, viz., 110 degs. Fahr. and 120 degs. Fahr. respectively, shall show no cracks or signs of expansion after 24 hours.

Tensile Strength. — Briquettes of neat cement, gauged with the minimum of water on a non-porous bed and placed in water 24 hours after gauging, shall carry an average tensile strain of not less than 350lb. per sq. in. after three days, 450lb. after seven days, and 550lb. after twenty-eight days from the time of gauging.

Briquettes composed of 3 parts of standard sand to 1 part of cement, by weight, shall carry an average tensile strain of not less than 150lb. per sq. in. at seven days, and 250lb. at twenty-eight days, from the time of gauging; but, whatever strength may be developed at the earlier dates, both neat and sand briquettes must develop an increase of at least 50lb. between each date.

MODERN LONDON BUILDINGS.

(Continued from p. 168, *No.* 429.)

A list of public and semi-public buildings in the E.C. district was published in our issue for March 25th, of domestic and religious buildings, colleges and schools in the same district in the issue for April 1st, and of business premises in the same district in the issues for April 15th and April 29th.

E.C. DISTRICT: BUSINESS PREMISES—*cont.*

BUILDING.	ARCHITECT.	APPROXIMATE COST.	REMARKS.
1898—*cont.*		£	
Office Premises, 29, Great St. Helen's.	T. H. Smith	—	This building contains about 100 offices, approached from Great St. Helen's and St. Mary Axe. The area covered comprises about 7,000ft.
Offices Premises, 30, 31 and 32, Coleman Street and 1, Mason's Avenue.	Gardner & Theobald	—	
Premises for Mr. Charles Taylor, 22 Warwick Lane.	Walter Stair	6,000	The building has a total area of 3,000 sq. ft.
Premises for Messrs. Edward Barnard & Sons, corner of West Harding Street, Fetter Lane.	H. H. Collins	—	
Premises for Messrs. Raphael Tuck & Sons, Moorfields.	W. H. Nash	—	The building is known as "Raphael House," and has full frontages to Moorfields, White Street and Tenter Street.
Warehouse for Weiler Brothers, Golden Lane.	George Vickery	—	The building fronts towards four streets, and stands upon an area of half an acre. It consists of basement and five floors over, with flat asphalted roofs. On the top floor are kitchens for the use of 300 employees.
1899.			
Hamilton House Building for the Employers' Liability Assurance Corporation, Thames Embankment.	Sir W. Emerson	—	The building faces the Embankment and has three frontages architecturally treated, all in Portland stone. The public office is on the ground floor, south side; in the basement is a hall for company meetings, and in the sub-basement a number of strong-rooms. On the upper floors are suites of offices, all of fireproof construction.
London & Westminster Banking Co., Ltd, Branch Bank, corner of City Road and Old Street.	R. Bennett	—	The style of the building is Italian. It is constructed up to the first-floor cornice in red and grey Aberdeen granite and the upper part in red brick, with Portland-stone piers, caps and dressings. The basement contains the strong-rooms, built in blue brickwork and steel banded. The banking-room on the ground floor has the walls lined with solid Devon marble, the skirtings, sills and mouldings being in black Ashburton marble. The twelve piers have alabaster bases and caps, with the enriched ceiling in fibrous plaster. The stone carving is by Mr. Seale, of Camberwell.
North Metropolitan Tramways Co.'s Offices, 60 and 62, Finsbury Pavement.	Davis & Emanuel	—	The basement, ground, first and second floors are devoted to rooms for counting and checking the tickets, advertising office, paying-in office for the conductors, general clerks' office, waiting-rooms, and a large room 38ft. by 20ft. for meetings of the Company's shareholders. The third and fourth floors are used for residential purposes. The elevation is of buff terra-cotta and white Portland stone.
Offices Premises, 15, Devonshire Square.	T. Chatfeild Clarke	—	The building contains private rooms and offices for a firm of solicitors, with a caretaker's residence on the top floor. The wood finishings internally are varnished pitch-pine. Externally, red bricks and Monk's Park stone were used. At the rear of the ground floor is a strong-room.
Office premises, 77 and 78, Gracechurch Street.	T. Chatfeild Clarke	—	This building occupies an important frontage to Gracechurch Street, with return frontage to Ship Tavern Passage, and consists of suites of offices. The building is fireproof throughout, including the roof, which is covered with copper. The front is of Portland stone, the sculpture and carving being carried out by Mr. M. Lawlor.
Prudential Assurance Company, Holborn (additional block of offices).	Alfred Waterhouse	—	The additions consist of a scheme for covering the whole of the parallelogram bounded by Brocke Street, Greville Street and Leather Lane, which has towards Holborn a frontage of 310ft. and which occupies an area of 12,244 sq. yds. The archway, under the tower, leading to a centre court, is groined with terra-cotta. and provides at a future date for the main entrance to the Prudential Offices. Red Peterhead granite, red terra-cotta and red brick are the materials of which outwardly the offices are mainly composed. The inner walls are, in the principal public offices, lined with faïence, and in the secondary, with glazed bricks of various tints.
Premises, corner of Bread Street and Cannon Street.	H. Huntly-Gordon	—	The front elevation of the building nearly faces the Mansion House Railway Station, and above the basement and ground floors there are five floors. There are sixty rooms contained on the various floors, while in the basement are specially constructed strong-rooms. The building is constructed of red brick and Portland stone, standing on a plinth of Labrador granite. The staircases are of marble and faïence.
Premises, 19, 21 & 23, Jewin Crescent.	Benjamin Tabberer	—	All the floors and roofs are constructed of iron and concrete. The stairs are built of artificial stone, and the staircases are enclosed by 9in. partitions of white-glazed brickwork. The walls behind the back areas are hung with white enamelled tiles. Where wood is indispensable, as for doors, shop-fronts and window frames, teak was used. In the front elevation the principal piers on the ground and first floors are faced with Farnley glazed bricks, the lower portion being brown and the upper a blue-grey. The rest of the front is constructed of Imperial stone and red Fletton bricks.
1900.			
Lloyd's Registry, Fenchurch Street.	T. E. Collcutt	—	The building is erected in Fenchurch Street, with a frontage to Lloyd's Avenue of 144ft. The accommodation provided includes general offices for the secretary and his staff, surveyors', engineers' and draughtsmen's rooms, committee-room, board-room and luncheon-room. There is also a library and a museum. The whole of the frontages are of Portland stone, and the staircase and entrance are lined with Devonshire marble.
National Telephone Head Offices, Victoria Embankment.	A. N Bromley	—	The building is faced with Portland stone throughout, and the figure subjects, which have been executed by Mr. Gilbert Seale, are designed to illustrate the uses of the telephone. The roofs are of high pitch in order to obtain as much space as possible.
Salisbury House, Finsbury Circus.	Davis & Emanuel	250,000	This building has a frontage to Finsbury Circus of about 300ft., to London Wall of about 300ft., to Circus Place of 100ft., and to West Street a frontage of 70ft. The London Wall frontage is devoted to shops, and the building contains about 800 offices, has seventy strong-rooms, and comprises two basements, upper and lower ground floor, and seven floors over, housekeeper's apartments being provided on the top floor. The entire building is faced with stone, the design being French Renaissance in character. The offices are arranged in suites of from one room up to twenty or thirty.
1901.			
Bank Buildings, Prince's Street.	Arthur C. Blomfield	—	This large block of commercial buildings is for the Governor and Company of the Bank of England. It is situated at the corner of Prince's Street, and overlooking Lothbury.
Eastern Telegraph Company's Building, Finsbury Pavement.	John Belcher	—	In this design the idea has been to symbolise, as much as possible, the work and scope of the companies that are to occupy the building, hence the frequent introduction of spheres and globes and other geographical and electrical insignia. The same idea is suggested for the hall, where the frieze represents the work of the telegraph companies in different parts of the globe. The emblems of the different companies are produced in the lead-work of the dome, which is surmounted by an armillary globe supported by appropriate figures. The ground-floor storey of the building is in granite, and the whole of the superstructure in Portland stone.
Premises for Messrs. Booth & Co., Ltd., 55, Cowcross Street.	E. W. Mountford	—	The lower part of the front building is faced with grey unpolished Dartmoor granite. Above that red bricks are used with Monk's Park stone. The carved frieze beneath the main cornice is of Portland stone. The slating is o green Westmoreland slates

E.C. DISTRICT: BUSINESS PREMISES—*cont.*

BUILDING.	ARCHITECT.	APPROXIMATE COST.	REMARKS.
1902.		£	
"Birmingham Daily Post" Offices, 88 Fleet Street.	John Belcher	—	This building is of Portland stone and Cornish grey granite, the style being rather a severe classic.
"Christian Herald" Warehouse and Publishing Premises, 6, Tudor Street.	Banister Fletcher & Sons	—	The building is of fireproof construction, and the front of red brick, the ground floor of Portland stone and the roofs covered with green Westmoreland slates.
Express Dairy Company's Depôt, 54, Ludgate Hill.	Young & Hall	—	The building has a frontage of 17ft. 6in. and a depth of about 67ft. The basement contains a smoking-room the entire length of the building, with a scullery and boiler-house behind. The ground and first floors are luncheon- and tea-rooms; the second floor, private rooms; and the third contains the kitchen, with scullery and store-rooms attached. The building is faced with Doulting stone.
Office Premises, 4, Coleman Street.	Ernest Flint	—	The building was erected on the site of a city merchant's house, which contained some cedar panelling and chimney-pieces—these have been preserved in the new building, which is of fireproof construction and is faced with Portland stone.
Offices for Mr. H. C. Stephens, 57, Aldersgate Street.	G. L. Crickmay	—	The Aldersgate Street front is built of granite on the ground floor, with thin red Ruabon bricks and Portland stone for the upper floors. The roofs are covered with green Westmoreland slates, and the back portion is of white-glazed bricks and Portland stone. The rooms and staircases have Belgian antique marble dados, and the fittings are of teak and mahogany.
Premises of the "Sheffield Telegraph," corner of Fleet Street and Fetter Lane.	Gibbs & Flockton	—	The building is Free Renaissance in style, faced with creamy-white Carrara faïence. There are nine shops, with a façade of 131ft. to Fetter Lane and a narrow 20ft. return front to Fleet Street. The block is four storeys in height, in addition to basement and attic floors. The ground and first floors contain the offices for the "Sheffield Daily Telegraph," with a frontage to Fleet Street and an entrance and two shops to Fetter Lane. The construction is fireproof, the floors being of steel girders and concrete supported on cast-iron standards.
Shop Premises for Messrs. Gamage, Ltd., 125-9, Holborn, and 1-8, Leather Lane.	Joseph Sawyer	55,000	The building has a frontage of 66ft. to Holborn and of 290ft. to Leather Lane. It is six floors in height, including the basement, and is divided into five sections, with intercommunication by means of wrought-iron party-wall doors. The interior is lighted by means of open wells, surmounted by glazed cupolas. The Holborn front is entirely of Portland stone, and that towards Leather Lane is of Portland stone and white Suffolk facing bricks. At fourth-floor level are sculptured figures representing various sports. Kitchen and dining-room accommodation is provided on the top floor for the entire staff which numbers about 250.
1903.			
Baltic Mercantile and Shipping Exchange, Jeffreys Square.	T. Smith and W. Wimble.	—	The exchange and offices occupy the whole of the ground floor of the building. The principal entrance is in St. Mary Axe, and consists of an outer arcaded vestibule, 32ft. by 16ft. and an inner hall 40ft. long by 24ft. wide, on either side of which are the secretarial offices and board-room. The Exchange is 152ft. long by 94ft. wide by 30ft. high, with a central dome 30ft. in diameter. The members' cloak-rooms and lavatories are in the basement. At the end of the Exchange is an apse from which there is access to postal and telegraph offices and members' reading-rooms. There are also luncheon- and smoking-rooms and kitchens in the basement. Above the Exchange are four floors of offices, containing about 200 rooms. Externally the front to St. Mary Axe is of polished granite up to first-floor level and above this in Portland stone with polished granite columns.

E.C. DISTRICT: HOTELS, RESTAURANTS, &c.

1876.			
"Baynard's Castle Tavern," 148, Queen Victoria Street.	Major J. F. Wieland.	—	The style of the building is an adaptation of the Tudor. It is carried out in red brick and terra-cotta.
1877.			
Holborn Viaduct Terminus Hotel.	L. H. Isaacs - -	120,000	The hotel has a frontage of 235ft. and a depth of 70ft. There are 170 bedrooms and twenty-two reception-rooms, in addition to coffee- and billiard-rooms. There is a detached block which cost £30.000. The style adopted was Italian, with a great deal of French feeling in the windows, dormers, Mansard roof, &c. The carving was executed by Thomas Bromfield.
Tavern for Chapman Bros., and Houses at corner of Cannon Street and Queen Victoria Street.	Taylor & Locke -	—	These buildings are immediately opposite the Mansion House, and have frontages to Cannon Street and Bow Lane of 112ft. and 50ft respectively. The tavern is situated at the corner of the site. The external walls are of Tisbury stone, with polished Shap granite pilasters.
"The Bull" Tavern, Devonshire Street.	W. L. R. Payne -	—	The ground-floor is of Portland stone, the superstructure being of red brickwork, with a balustrade in terra-cotta.
"The King's Head" Tavern, Fenchurch Street, (rebuilding).	F. & H. Francis -	—	
1878.			
"Three Nuns" Hotel, Aldgate.	Jarring & Wilkinson.	10,000	
1879.			
Anderton's Hotel, Fleet Street.	Ford & Hesketh -	40,000	The building is of red brickwork with Portland-stone dressings, and is very elaborately carved. The elevation is 78ft. high. On the ground-floor are two large shops, above which are five floors, comprising the hotel proper. The hotel is approached by an arched entrance of polished granite leading into a corridor 67ft. long by 10ft. wide by 14ft. high. The crypt in the basement is 51ft. by 37ft. by 20ft. high. The depth of the building is 72ft.
Manchester Hotel, 136, Aldersgate Street.	Bateman & Corser	40,000	The building is Gothic in design, built of red brickwork, with stone dressings. The ground floor contains shops fronting on Aldersgate Street and Long Lane. The coffee-room is 50ft by 32ft. and the smoking-room 60ft. by 24ft.
"Old Rodney's Head" Tavern and adjoining warehouse, 14, Old Street, St. Luke's.	Rowland Plumbe -	—	The tavern has a frontage of 3 ,ft. and a depth of 60ft. The buildings are of red brick, with stone dressings.
1880.			
Jerusalem Coffee House, Cowper's Court, Cornhill (rebuilding).	Bassett & Keeling	—	There is a spacious hall on the ground floor. The front elevation is of red brickwork with brown Portland-stone dressings, and the back elevation of white-glazed brickwork.
1881.			
"The Golden Axe" Tavern, St. Mary Axe (rebuilding).	H. H. Collins -	—	
Auction Mart Restaurant, Tokenhouse Yard (additions).	Bassett & Keeling	15,000	The decoration of the restaurant is Renaissance in character.
1884.			
'The Old Yorkshire" Tavern, Philip Lane, London Wall.	J. T. Smith - -	8,000	The building is faced with red bricks, with alternate bands of red Mansfield stone.
"The Salutation and Cat" Tavern, Rose Street, Paternoster Square (rebuilding).	Wylson & Long -	16,000	The facings to the building are of red brick and the dressings of terra-cotta.
1885.			
"The Kings and Keys" Tavern, 142, Fleet Street	Hooker & Hennings	—	Piers on the ground floor, of grey granite, support a projecting bay of Portland stone above. The carving was executed by Mr. Frampton.
"The Jamaica" Tavern, St. Michael's Alley, Cornhill.	Banister Fletcher -	—	The style is a free adoption of Renaissance, carried out in red brick with red Mansfield stone dressings.
1886.			
"The Green Dragon" Tavern, 56, Fleet Street.	Freud & Keogh -	—	The building is 72ft. high and comprises six floors. The ground floor is faced with red Aberdeen granite, with polished pilasters and columns. The upper portions are of Corsehill and Portland stones, and there is a balcony at first-floor level.
1888.			
"Old Chapter" Coffee-House, 49, Paternoster Row.	Taylor & Locke -	—	The building has frontages to Paternoster Row and Paul's Alley of 50ft. and 49ft. respectively. The façade is 58ft. high to the ridge. The ground-floor storey is in richly-carved Doulting stone, surmounted by a cornice. The upper portion is in red brickwork, with Doulting-stone dressings.
1901.			
Throgmorton Restaurant, Throgmorton Street.	Charles Reilly -	—	This restaurant is constructed entirely below the level of the street. Entering through a spacious lobby, a marble staircase, lined with gold mosaic, leads to a large restaurant adorned with oak panelling, marbles, a decorative frieze and ceiling, and paved with mosaic, about 50ft. by 40ft. and 15ft. high. A grille of variegated onyx is placed at the end of the restaurant, with a rich background of Devonshire marble. Beyond this is the dining-room, 260ft. long by about 16ft. wide. The walls are lined with marble, with coupled pilasters of verde antique, with bronze Ionic capitals and frieze and rich red marble dado. The saloon between the restaurant and dining-room is intended for private dinners. Going down again is a large room, decorated with Devonshire marble, bronze capitals and friezes, which is intended as the grill-room, and is 40ft. below ground-level. The kitchen arrangements are fitted with the most modern appliances

(To be continued.)

Keystones.

A New Police Station at Moor Lane, E.C. is being erected.

A new Church at Old Basford is being erected at Dob Park, Arnold Road. The architects are Messrs. R. Evans & Son.

A New Bank at Blackhill, near Consett, has been erected for the York City and County Banking Company. Mr. G. T. Wilson, Blackhill, was the architect.

Mr. E. J. Physick, sculptor, has been commissioned to execute the memorial of the late Dr. Parker for erection in the City Temple.

Northern Architectural Association.—The annual report gives the present membership as 203, and the accounts show a balance to the good of £74 18s. 4d.

French Excavations at Delphi. — The museum at Delphi, where the important antiquities brought to light during the excavations made there by the French Government have been deposited, has been inaugurated and handed over to the Greek Government.

The Competition for Baptist Church and Schools at Wavertree, Liverpool, has been decided in favour of designs submitted under motto "New Era," the authors being Messrs. George Baines, F.R.I.B.A., and R. Palmer Baines, 5, Clement's Inn, Strand, London, W.C. The assessor was Mr. Henry Hartley, F.R.I.B.A., F.S.I.

Signor Luca Beltrami, who has been entrusted with the reconstruction of St. Mark's Campanile, is one of the most distinguished architects and art critics in Italy. As an authority on Italian Mediæval and Renaissance architecture he is almost without a rival. Under his direction the Sansovino loggia is to be rebuilt, as well as the campanile.

Competition Reform Society.—The Committee disapproves of the existing conditions in the competition for artizans' dwellings at High Wincobank, Sheffield, but is endeavouring to get them revised. Meanwhile members are requested to abstain from competing. The reasons of complaint are—excessive amount of work required; no undertaking that author of premiated design will be entrusted with the carrying out of the work; no mention of commission proposed to be paid, &c.

A Piccadilly Colonnade.—The Improvements Committee of the London County Council suggest the widening of Piccadilly between Arlington Street and the Green Park, now that the Walsingham House and the Bath Hotels are being rebuilt. The owners of the property have agreed to surrender, at a price much below the market value, the land necessary to secure a width of 85ft. for this part of the thoroughfare, provided the following conditions are accepted:—(1) The owners to have the right to build over the new footway upon the first-floor level and above up to the height of the present buildings, the new buildings being supported by a colonnade; (2) the line of piers of the colonnade to be built on a give-and-take line; and (3) the Council to take the necessary steps to obtain possession of the portions of the premises at present occupied by lessees. The gross cost to the Council of the property needed for the improvement will be about £43,000, or, deducting £2,000 to be contributed by the company, £41,000. The cost of the paving works is estimated at £2,000. The Committee believe that the method of securing the additional width by the formation of a colonnade will introduce a very pleasing architectural feature in that part of London.

The Aberdeen Municipal Buildings are to be extended and altered at an estimated cost of £10,000 from plans by the city architect.

His Excellency the Lord Lieutenant was present at the recent conversazione of the Royal Institute of Architects of Ireland, held in the buildings of the Royal Hibernian Academy of Arts.

Sutton Coldfield Town Hall Competition.—Messrs. Mayston & Eddison, of 7, Great James Street, Bedford Row, London, have been placed first. The second and third places have been allotted to Mr. Herbert A. Hall, of the Old Park, Southgate, London, and Mr. W. F. Edwards, Colmore Chambers, Newhall Street, Birmingham. There were forty competitors, and the prizes offered were £50, £30 and £20.

A Manchester Competition.—The assessor in the competition for the proposed new Manchester and Salford Hospital for skin diseases, Mr. Keith D. Young, has made his award as follows:—1st premium, No. 15, Messrs. Thomas Worthington & Son, Crown Street; 2nd premium, No. 11, Messrs. C. K. & T. C. Mayor, John Dalton Street; 3rd premium, No. 9, Messrs. Mee & Hooley, Victoria Street, Manchester.

Liverpool Cathedral Competition.—The five firms of architects who were invited by the Committee to send in final designs for the proposed cathedral on St. James's Mount, Liverpool, have all fulfilled the requirements. The drawings have been hung in the Walker Art Gallery for the convenience of the advisory architects, Messrs. G. F. Bodley, R.A., and Norman Shaw, R.A., who began their task at the commencement of last week.

Dundee Architects and Registration.—At a meeting of the architects of Dundee and district held last week a resolution was unanimously passed in favour of the registration of architects and the promotion of a Bill in Parliament for that purpose. Among the speakers were Mr. A. A. Symon, Arbroath, president of the Dundee Institute of Architecture, and Messrs. Blackadder, C. Owen, Leslie Owen, Murray, Shepherd and Thomas, Dundee, and Gavin, Arbroath.

Irish Marble for Marlborough House.—The Prince and Princess of Wales, who recently visited the collections of Irish marbles and building stones exhibited by the Department of Agriculture and Technical Instruction for Ireland at the Imperial Institute, London, have just shown their interest in this collection by ordering some columns of Irish marble for the decoration of Marlborough House. The marbles ordered are Connemara or Irish Green, Galway Black, Irish Grey (Cork), Sunset (Midleton), and Clonowen Fossil.

Grinling Gibbons Carving.—Some choir panelling, a screen and an altar rail by Grinling Gibbons, formerly in the chapel of Winchester College, are on exhibition in the skating rink at the Cheltenham Winter Garden till Friday, May 15th. *In situ* the screen and panelling occupied a space of about 65ft. by 33ft. About 1840 they were removed by Butterfield, presumably to give place to Gothic work, and soon after this the College authorities appear to have sold the work to a nobleman, in whose possession it remained until comparatively recently. The present owners are a London firm, and the work has been temporarily in Cheltenham as the result of a commission to Messrs. H. H. Martyn & Co. to clean and restore it. In the way of actual "restoration" there is very little: the oak is in excellent preservation, and, except for damage incidental to removal from its original position, practically no renovation was required. We understand that in all probability the work will go to South Kensington Museum.

The Temple Church.—In reply to enquiries made recently in regard to the condition of the Temple Church, Sir Henry Lawrence, sub-treasurer of the Inner Temple, stated that the building had been examined by a competent architect and the matter was under consideration of the Benchers of the two Inns. The carving and decorations of the porch were considerably decayed, and would, sooner or later, have to be renewed. It was a question whether this would have to be done now or ten years hence. There was, however, no structural damage, and nothing to imperil the safety of the building. All the decayed work only dated back about sixty years, when there was considerable restoration of the church and unsuitable stone was used.

R.I.B.A.

President's Second "At Home."

ON Monday evening at 9, Conduit Street, W., Mr. Aston Webb held the second of his successful "At Homes" as president of the Royal Institute of British Architects. The rooms were again filled to overflowing and the buzz of voices no whit the less. It will be remembered that a splendid collection of drawings of the late J. F. Bentley's work was exhibited at the first of Mr. Webb's "At Homes": on this second occasion the late W. Eden Nesfield was represented by a similar collection, including Kinmel Park, Abergele (a mansion as large as Hampton Court—1865), Cloverley Hall, Shropshire (1865), Loughton Hall, new wing to Combe Abbey, Warwickshire, for the Earl Craven (1861), bank at Saffron Walden (1863), Lea Wood, near Matlock (1874), the church of St. Mary, Farnham Royal (1874), Radwinter Church.

William Eden Nesfield was born on April 2nd, 1835. His father, Major Nesfield, was a well-known member of the old Society of Painters in Water Colours, and became famous in his day for designing and laying-out gardens, terraces and parks: to him we owe the gardens in Regent's and St. James's Parks, the remodelling of those at Kew, and at many country seats. His son was educated at Eton, and afterwards went for a few months to Mr. J. K. Colling "to learn to draw," and then to the late Mr. Burn, where Mr. Norman Shaw was also a pupil at the time: indeed, these two names run counter—as the late Mr. Brydon has said, all during the 'sixties their names were so linked together, their published sketches from the Continent so similar in character, the conjunction of Nesfield & Shaw so familiar in the artistic world, that it hardly ever occurred to think of them separately, and yet, in spite of a brief partnership in the earlier days of their practice, they never really did a joint work. They shared offices and studies, had the same high aims and aspirations, the same keen artistic instincts; good comrades both, but each devoting himself to his own special work; advancing along separate yet parallel lines in all that made for the culture and ennobling of the art they mutually loved and whose highest interests they did so much to promote. Nothing was more characteristic of Mr. Nesfield than his cottages and lodges. Those in Regent's Park (1864) and Kew Gardens (1866) are landmarks in the history of such buildings. He was a master of planning and construction, as one may see in such buildings as Cloverley and Kinmel, he had a keen eye for the picturesque, he never lost sight of the dignity of his work, and no detail was too small for his best attention. He died in 1888.——The following have been nominated for the Council of the Royal Institute of British Architects for the next session:—Messrs. R. Farrow, W. Milner Fawcett, Ernest George, J. W. Simp- C. H. Heathcote, S. Perkins Pick, S. B. Russell and Silvanus Trevail.

THE EFFECT OF DESIGN ON CONSTRUCTION.

From a Contractor's Point of View.

By R. W. NEWMAN, A.M.I.C.E.

(Concluded from p. 178 of No. 430).

IN Fig. 10 will be seen the sectional plan of a brick-faced concrete wall in which the heading courses have been dispensed with, and instead a vertical bond has been formed by the brickwork. This method has many points to recommend it, the chief being that owing to the height to which the brickwork may be built not being limited by heading courses, but only by the height at which the brick-facing will support the green concrete, the various levels may be made to suit the position of the temporary strutting.

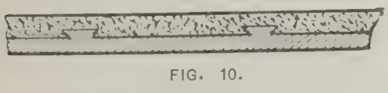


FIG. 10.

The usual method of constructing brick-faced concrete walls is to build the brick-facing to a certain height, and then fill in the concrete behind. It will, however, be found difficult to build battering walls in this way, as, if there is much batter on the wall, it will be impossible to carry the brick-facing to any height, as every course built tends to place the centre of gravity of the facing outside the base and the newly-laid brickwork tends to fall over backwards. This refers very much the same to curved walls, except that it will almost invariably be found that the latter-mentioned conditions apply in so marked a degree that to build the curved brickwork before the concrete is put in is almost an impossibility.

An alternative method is to put the concrete in first against wooden shutters, which are withdrawn before the brick-facing is built, but the height of the shuttering would be limited to the distance between the heading courses. It is difficult, however, to set the shutters to give a fine and regular joint between the brick and concrete, and it will generally be found that either the concrete has to chipped or that a large joint is left between the brick and concrete which has to be filled up with mortar. A 9in. brick-facing to concrete work is preferable to one of 4½in. It allows the work to be proceeded with more rapidly, as the facing, being thicker, is better able to withstand the weight off the green concrete than would be the case with 4½in. work.

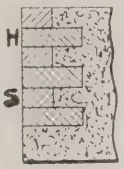


FIG. 11.

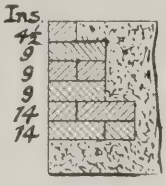
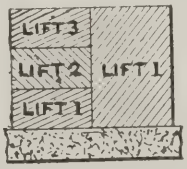
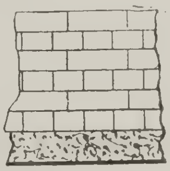


FIG. 12.





In Fig. 11 a wall with a concrete backing is illustrated, having a brick-facing of alternate headers **H** and stretchers **S**. Some engineers will specify that such a wall must be levelled up with concrete under each heading course, or every 6in. This causes a number of horizontal joints in the wall and increases the cost of the concrete, because it only allows comparatively small quantities to be put in at one time.

In Fig. 12 is shown a similar wall in which the concrete can be put in in 18in. lifts, and yet the bond of the brickwork appears the same on the exposed face. It may sometimes be to a contractor's advantage, with the consent of the engineer, to build the work as shown in Fig. 12 and accept payment for work as in Fig. 11, recouping himself for the additional brickwork by the saving in labour through being able to put in treble the quantity of concrete and brickwork at the same time. It must, however, not be taken from this that it would always be safe to adopt this alternative, as much depends on the relative prices of the brick and concrete work and the quantities involved.

How this saving may be effected will be best appreciated from an example. Suppose the brickwork took two hours to build in a 6in. lift; it would probable take four hours in the 18in. lift. Now the cost of erecting the scaffold is the same in each case, say one hour; this hour is saved twice over in the 18in. lift, added to which is saved the difference in the cost of getting ready the concrete stage three times instead of once, and also the cost of putting in the barrow runs, and the thousand-and-one incidental expenses which will occur to one familiar with such operations.

While on the question of retaining walls it may be appropriate to call attention to the method of proportioning plinths in parapets (Fig. 13). A panel is shown with a 2¼in. break, which necessitates cutting bricks at considerable expense and waste to carry out the design; had the breaks been 4½in. or multiples of that dimension no cutting would have been necessary (as shown by section C D).

The design of chimneys does not fall to the lot of every engineer, and I refer to this branch of construction to illustrate two points of interest only. In designing a hexagonal chimney the draughtsman in many cases extends the hexagonal section to the concrete foundation on which the footings of the chimney stand. Fig. 14 shows such a foundation and footings, and also the line to which the contractor will get out his excavation. Had the designer adopted the line which the contractor must follow in getting out his ground work, he would have saved the shuttering to the concrete, and would have distributed the weight over a larger area at little or no extra cost.

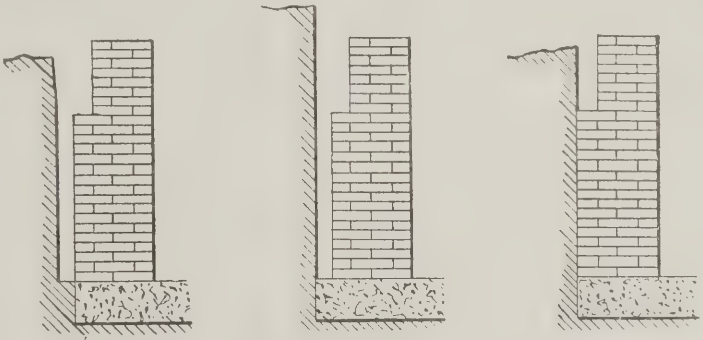


FIG. 15.—BUILDING BRICKWORK IN EXCAVATION.

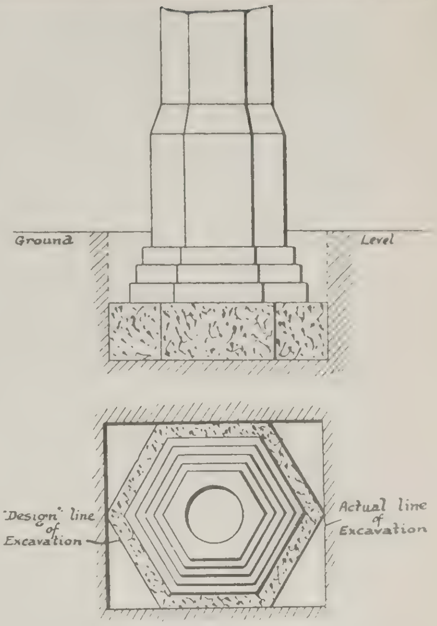


FIG. 14.

I have seen in some specifications a clause somewhat as follows: "For the purpose of keeping the angles in true line, the contractor shall as far as possible keep the same workmen on each angle from top to bottom of the shaft." It is a well-known fact that no two bricklayers lay their bricks alike. Give two men piers to build, say 3ft. high, with the same number of bricks, all gauged as to thickness, the result will probably be, if they are not allowed to measure the work as it proceeds, that one man will build his pier 2ft. 11in. high and the other man will make his 3ft. 1in. Applying this to the case of the chimney shaft above mentioned, it will be found that the joints are not horizontal, except where the courses have been levelled up; but if, instead, the men follow each other round the chimney, taking a fresh angle each day, this personal factor

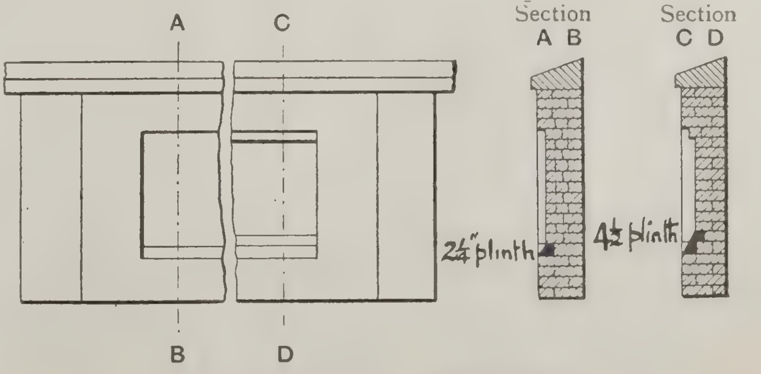


FIG. 13.—PLINTHS IN PARAPET WORK.

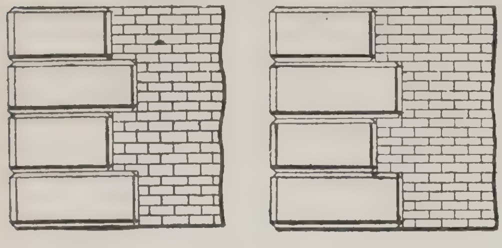


FIG. 16

3in. Bricks—Bad Result.
5 courses of brick = 16¼in.
6 " " 19½in.

2¾in. Bricks—Good Result.
6 courses of brick = 18in,
i.e., the depth of the stone.

will be largely eliminated and the courses of the chimney will be level.

In building brickwork in excavations it is not always possible to get out the ground to the dimensions given on the drawings. Allowance has sometimes to be made for timber to support the ground, and occasionally additional ground has to be removed to provide space for the men to work in. This may or may not be provided for in the design. Fig 15 shows such a case. Suppose the excavation is got out to the precise dimension of the outside of the brickwork, the probability is that some of the ground (especially in the rock) will project and that the bricklayers will have to wait while this is being removed, during which the earth may fall on and perhaps spoil what was previously well-finished work. Apart, however, from this consideration, when a bricklayer lays a brick he gets his fingers over the end, and wants room to do this, so that at least 3in. should be excavated beyond that shown for brickwork on the drawing. Neglect of a small precaution of this kind will materially affect the number of bricks a man will lay in a day.

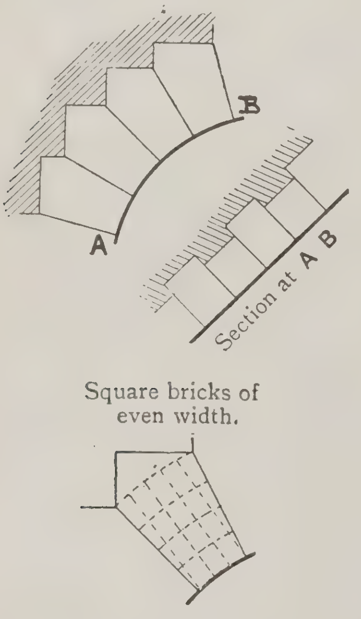


FIG. 17.—BRICK ARCH WITH STONE VOUSSOIRS.

Combinations of brick and stonework require very careful treatment. Examples of this class of work are too frequent to need more than passing reference to two typical cases (Fig. 16). If in a brick building the depth of the stone quoins is given on the drawing as 18in., while the brickwork is specified to be four courses to the foot, should the contractor get the stone ready dressed, with the chamfers worked, the stone 18in. deep will be found (when it comes to be set) not to agree with the brickwork. A ¼in. thickness will have to be dressed off one bed of the stone, and the chamfer to be re-dressed, because the thickness of the mortar joint has not been taken into account.

Or, again, suppose 3in. bricks are specified; then a stone 18in. deep will not suit at all, because with ¼in. joints the nearest number of courses will be 5in. by 3¼in. = 16¼in. or 6in. by 3¼in. = 19½in., in which case the quoins will have to be 16in. or 19¼in. in depth as they come worked from the quarries.

Again, take the case of a brick-arch faced with stone (Fig. 17). Here the inner face or soffit may work with 2¾in. bricks, but on receding from the soffit the length from the facing stones of even depth increases, and so must the width of the bricks, until a point is reached where an additional course can be worked in.

The use of stone in courses of even thickness is commonly met with in designs. A typical case is shown in Fig. 18. As it frequently happens that a contractor has to open a quarry for one particular contract, it must of necessity happen that he gets stone of varying thicknesses, but owing to the design he has to work these down to one uniform thickness. If designers would bear in mind that stone and brick are not the same material, and would give the contractor the option of varying the thickness of the courses, as shown in Fig. 19, the cost of the work would be lessened and the appearance would not suffer.

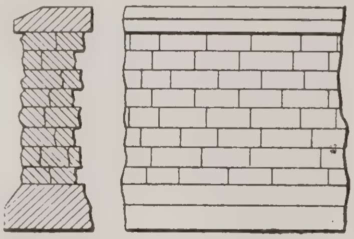


FIG. 18.

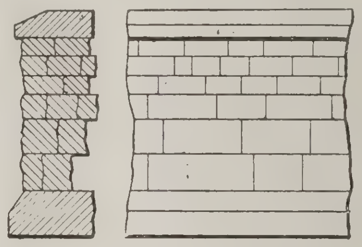


FIG. 19.

STONE WALLS WITH COURSES OF EVEN AND VARYING DEPTH.

The method of constructing centres on which brick or concrete arches have to be formed, and the means to be adopted for their ready removal, have given rise to much ingenuity; and while I do not propose to discuss the question, I will cite one example of the effect of a small detail of design, with reference to centering, on the cost of construction. Fig. 20 shows an arch to a culvert, which may be taken to have a span of 10ft., and the side walls to which are curved.

There is no special difficulty in constructing such a centre or the arch in concrete or brick, but it will be noticed that though it may be possible to lower the centre, say 1in., it is not possible to lower it sufficiently to enable it to be carried forward to be re-erected without taking it to pieces. In such case it might well be made somewhat as shown, in three pieces, with a vertical joint between them. The tie-beam having been removed, the two side pieces would have to be temporarily propped in place, and the middle portion taken out and carried forward to where it has to be re-erected, the two outside pieces being afterwards treated in the same manner. This process, however, entails considerable expense. Fig. 21 shows a similar culvert in which the arch has been reduced in area by an almost negligible amount by the insertion of a special form of brick at the springing. In this case the contractor is able to make the centre in one piece, which can be struck, carried forward and re-erected with much less labour, and consequently at much less cost.

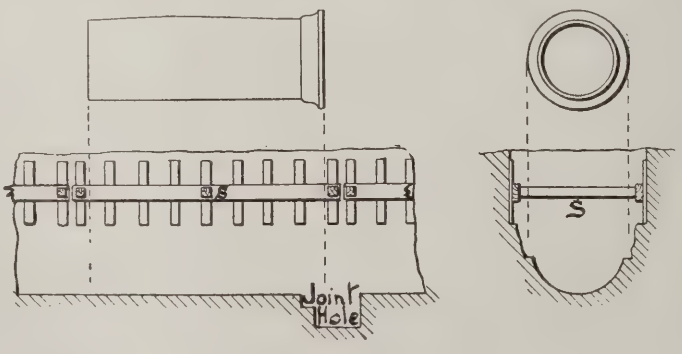


FIG. 22.

To take yet another branch of construction—the laying of water or gas mains, which are usually made in 9ft. or 12ft. lengths. If they are laid at some depth from the ground surface, the ground will have to be secured by temporary timbering. To get the pipe into place, it will be necessary to remove the middle strut (s, Fig 22) of each frame of timber and to replace it after the pipe has been lowered into place. If the pipes are 9ft. long, the contractor might elect to use wallings 12ft. in length, and as the unsupported length between the end struts while the pipe was being lowered into place would be say, 10ft., it would be possible to use wallings 3in. thick: but supposing the pipe was 12ft. long, the unsupported length would be at least 13ft.; the wallings would have to be at least 14ft. long, and the thickness would have to be increased to 4in., necessitating the trench being got out 2in. wider, a difference trifling in itself, but which might increase the total excavation by 7½ per cent., thus becoming a matter worthy of serious consideration to a contractor.

So much has been written and said recently on the subject of standardization that I will not dwell upon it, though it would be impossible to emphasize too much the importance of its bearing on the cost and methods of construction. I venture to hope that the day is not far distant when the question of the standardization of pipe joints will be settled. For some reason, best known to himself, every engineer appears to adopt a design of his own for pipe sockets. These designs only differ by the merest fraction from each other, but result in the pipe-founder having to keep a huge stock of socket patterns.

It may frequently happen that owing to the varying level at which a main has to be laid it is necessary to thicken the pipes at various portions of its length, to withstand

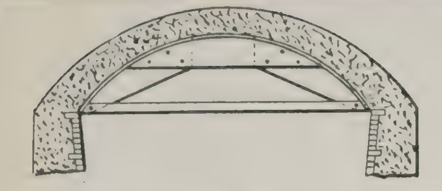
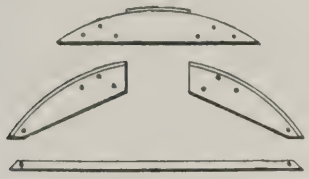


FIG. 20.



the crushing weight of the superincumbent earth, or to withstand the increased internal pressure due to the lower level (above ordnance datum) of a portion of the main. Naturally, the first consideration of the designer would be to keep the internal diameter the same, and increase the external diameter, the effect of which would be that the internal diameter of the socket of the adjoining pipe would have to be increased, entailing an increase in the external diameter to keep the thickness of the metal in the socket the same. If, however, the designer had maintained the outside diameter constant, and had reduced the internal diameter of the pipe, he would not have materially diminished the discharging capacity of the line of pipes, and would have all the sockets of one standard size.

Apart from the saving of the expense of making socket patterns for each thickness of pipe, attention should be called to the convenience of finding, if a burst occurred—and it was necessary to put in a new pipe at short notice—that the spigots and sockets of every pipe on the line of main were interchangeable.

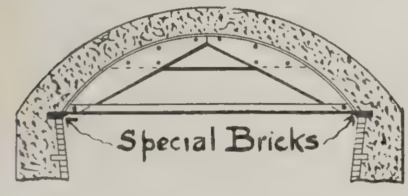


FIG. 21.

In conclusion, I wish to say that my sole object in presenting this paper has been to put before those whose lot is the design of details that the cost at which a contractor can take work depends largely upon these details of design.

Law Cases.

A Leicester Architect's Claim.—The decision in the case of *Hall* v. *Wright*, heard at Leicester last November, has just been given. The plaintiff, Mr. Amos Hall, architect, of Leicester, claimed £859 10s. from the defendant, Mr. Orson Wright, builder, of South Wigston, being the balance alleged to be due for his professional charges and services as architect, amounting to £1,469 8s., for the building of the Grand Hotel extension at Leicester. The defendant had before action paid the plaintiff £609 18s. 6d. on account of such charges, and had paid into Court a further sum of £175, which, he contended, was sufficient to satisfy the claim, leaving a balance of £684 in dispute. After hearing, the action was referred to a special referee, Mr. G. F. Hohler, barrister-at-law, who finds that the sum of £175 paid into court is more than sufficient to satisfy the claim of Mr. Hall, and that £9 3s. 6d. be repaid to the defendant. The arbitrator further directs that the costs be paid by the plaintiff.

Builders' Notes.

The Isolation Hospital, Pontypridd, is being warmed and ventilated by means of Shorland's patent Manchester stoves with descending smoke flues and exhaust roof ventilators, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

Cardiff Painters' Strike.—The painters' secretary stated on Monday that twenty-two masters have now signed the new rules and that others are expected to do so. This is disputed by the employers' secretary. About 150 men are on strike, and about 150 are working on terms satisfactory to the Society.

Lifts.—Messrs. Easton & Co., Ltd., of Broad Sanctuary, London, S.W., have appointed Messrs. J. Lomax, Kendal & Co., of St. James's Square, Manchester, as agents for their electrical and hydraulic lifts for the cities of Manchester, Stockport and Salford, and all communications relating to lifts should be addressed to them. This agency is entirely separate from the superheater and general agency for Lancashire and the adjoining counties, which is conducted by Mr. G. D. Seaton from No. 49, Deansgate, Manchester.

The British Fire Prevention Committee announce their arrangements for the impending session, which will comprise some fixtures of more than ordinary importance. The Committee's testing operations will recommence on June 1st, and will this year comprise several tests with floors and partitions. The International Fire Prevention Congress, convened by the Committee, will be opened by the Lord Mayor on July 7th. The Association of the Chief Officers of Professional Fire Brigades will hold their annual meeting in London at the invitation of the Committee on July 9th. The National Fire Brigades' Union will arrange its annual competitions in connection with the International Fire Prevention Congress to commence on July 10th. The International Fire Brigades Council will meet in London on July 11th at the invitation of the Committee.

London County Council Brickmaking.—At last week's meeting of the Council the Housing of the Working Classes Committee recommended that the expenditure of a further sum of £2,500 be sanctioned in respect of brickmaking and ballast-burning on the Norbury estate during the season 1902–3. Mr. E. White held that the Council's brickmaking had been a failure. He strongly advised the Council to discontinue that disastrous experiment. Mr. Phillimore agreed that bricks ought not to cost 29s. 7d. per 1,000 to make, but regarded Mr. White's condemnation as too sweeping. Last year was an exceptionally bad year for brickmaking, and the men were new to the ground. Sir J. MacDougall defended the operations of the Committee, and anticipated a saving of 2s. per 1,000 this year. Lord Carrington, chairman of the Committee, assured the Council that this was a case of "much cry and little wool." There was not much to criticize and still less to condemn. The recommendation was agreed to.

The Building Trade in Natal. — The monthly report of the Master-Builders' Association of Pietermaritzburg states that during the month of March the building trades of the city were exceptionally busy in all departments. The trades, however, are still terribly handicapped owing to the scarcity of labour. Plasterers, bricklayers and carpenters are particularly in demand, the ruling rate of wages being 17s., 15s. and 15s. respectively. The cost of board and lodging in the city is £5 per month. Large contracts for buildings have just been given out, and others are about to be placed. Among them may be mentioned new post and telegraph offices, law courts, &c., so that during the next few years the building trades are likely to be exceedingly brisk, and constant employment would thus be assured to anyone emigrating to the colony. Tradesmen wishing to emigrate are requested to write to the secretary of the Master-Builders' Association, Pietermaritzburg, who will at once put them in communication with builders in need of men.

The Nottingham Society of Builders' Labourers have a standard rate of wages—which local builders and contractors, with few exceptions, recognize—of 6½d. to 7d., and they are pressing for the payment of this rate to all the builders' labourers employed on the work. The contractors, however, refuse to grant the request.

A Gravesend Hubbub.—The dissatisfaction and indignation aroused in Gravesend as the result of the failure of the Town Council to defend the action brought against them by Messrs. Davey, builders, who recovered £2,544 damages, with costs estimated at about £2,000, had free expression at the recent public meeting in the Town Hall, when, after much disturbance, a resolution was carried "That there appears to have been a want of good judgment and management on the part of the Council in carrying out the scheme for providing the town with an electrical service, thereby causing serious financial loss to the town, and also tending to lower the prestige of the borough; and, further, this meeting calls upon the Corporation to lay before the ratepayers a statement fully setting forth all the facts and circumstances relating to the matter."

Slag Cement. — The Chevalier C. de Schwartz, of Liège, read a paper last week before the Iron and Steel Institute on the manufacture of Portland cement from blast-furnace slag. He said the first attempts at producing slag cement were made at the Friedrich Wilhelmshütte in Germany in 1861, but owing to the limited field of application of the material and to its defects the manufacture made comparatively little progress. It is now about 8½ years since a slag-cement factory in Germany tried to remedy these shortcomings, and finally succeeded in making Portland cement from blast-furnace slag by mixing granulated blast-furnace slag with limestones in the same manner as is done with the materials used for making Portland cement; that is, by calcining the intimate mixture of these materials to vitrification, and by grinding the product of the calcining kiln into fine powder. The cement is of a very superior quality, and corresponds to that termed Portland cement. It had some advantages over natural Portland cement, as the yield from the raw materials with the former is about 80 per cent., whilst, when raw materials are used, it seldom exceeds 60 per cent. Besides, Portland slag cement, the author said, was more trustworthy and more regular, and its manufacture could be more easily controlled than that of natural Portland cement.

Obituary.

Mr. Charles Dawson, builder, of Dragon Avenue, Harrogate, died recently in his sixty-second year.

Mr. John Linton, J.P., of the Woodlands, Stow Park Circus, Newport, Mon., died last week in his sixty-third year. He was head of the firm of Linton & Geen, contractors, &c., who began the Tredegar Dry Dock, an undertaking which was successfully opened last autumn. Deceased was chairman of the Star Brick Co., the Westgate Hotels Co. and was connected with other undertakings. One of the sons of his first marriage is Mr. E. M. Linton, architect, of Newport.

Electrical Notes.

To Found a Chair of "Electrotechnics" at Liverpool University, in connection with the engineering department, Mr. David Jardine, shipowner, has given £10,000.

L.C.C. Electric Lighting Loans.—The London County Council decided last week to lend £200,000 to the St. Pancras Borough Council for electric lighting, and £10,000 to the Stepney Council for similar purposes.

Electric Welding.—The Sunderland Tramways Committee intends to give a trial to the Thermit system of welding tramway rails, under which it is believed a considerable economy will be effected, as it will prevent the hammering of the joints.

Price of Current at Salford.—The Electricity Committee of the Salford Town Council has fixed the price of electricity for power purposes after July 1st next at 2d. per unit up to 1,000 units, 1½d. for the next 10,000, and 1d. per unit beyond.

A Connection with the Mont Blanc Railway.—The Municipal Council of St. Gervais-les-Bains has adopted a scheme for the construction of an electric railway from Fayet, on the new line from that town to Chamonix, to the summit of Mont Blanc. The first section of the line, from Fayet to Aiguille-du-Gouter, is to be begun immediately.

Bristol's Electricity Supply.—The result of the past year's work shows that the use of electricity for power purposes has continued to increase. The sale of energy for this purpose during 1902-3 has more than doubled. The gross profits were £27,165, and after meeting financial charges a nett profit of £5,872 remains.

The New Asylum at Cardiff is to be lighted by electricity supplied by the Corporation. The South Wales Power Distribution Co. offered to supply 225,000 units per annum at 1½d. per unit, equal to £1,406 5s., but it was estimated that if the Corporation generated its own current it would only cost £706 per year, leaving £700 to meet interest and loan charges on the plant laid down.

Electrification of the "Underground."—The Metropolitan District Railway Co. expect to open a section of their line, six miles in length, between South Harrow and Ealing for electrical working in the course of a few weeks. The working of the main line by electric traction depends upon the date of the completion of the power-house at Lot's Road, Chelsea, which is being pressed forward as fast as possible.

A Vast Electric Power Scheme.—A Select Committee of the House of Lords had under consideration last Friday the North-Western Electricity and Power-Gas Bill. A company is to be formed with a capital of one and a half million pounds, and its operations will embrace the whole of the counties of Cheshire and Flintshire, with parts of Staffordshire, Denbighshire and Derbyshire. This area will be supplied from four huge generating stations. The average price which would be charged for Mond gas would be 2d. per 1,000 cub. ft., though the promoters were asking to be allowed to charge small consumers 4d.

The Overhead Trolley System for Derby is recommended by the Tramways Committee, who also propose to proceed at once with the construction of tramways on several routes which will not be affected by the main drainage scheme now being carried out. The Committee estimate that the construction of the permanent way on the routes in question will cost £55,915, that the electrical equipment will necessitate an expenditure of £10,150, that car-sheds and buildings will cost £7,000, and that twenty-five cars will cost £12,500. They are applying to the Council for £85,565 for the work.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

Abertillery (Mon.).—For the erection of a school for boys and girls and a school for infants, to accommodate respectively 540 and 396 children, along with the necessary out offices, boundaries and playgrounds, for the Aberystruth School Board. Mr. R. L. Roberts, architect, Abercarn, Mon. Quantities by architect:—

D. W. Davies, Cardiff	£13,200	0	0
D. Davies, Cardiff	12,865	0	0
Latty & Co, Ltd., Cardiff	12,836	3	5
N. Bagley & Co., Abertillery	12,418	16	6
Smith Brothers, Newport	11,860	0	0
J. Newcombe, Ebbw Vale	11,642	0	0
D. Lewis, Llanhilleth	10,650	0	0
A. P. Williams, Crickhowell	10,509	0	0
E. C. Jordan, Newport	10,370	0	0
D. W. Richards & Co., Ltd., Newport	10,100	0	0
D. J. Davies, Newport	10,040	0	0
J. Jenkins,* 11, Clifton Road, Newport	9,925	0	0
J. Morgan, Blaenavon	9,900	0	0

* Accepted.

Bournemouth.—For the erection of a new residence in Osborne Road, Branksome Park, Bournemouth, W., for Mr. H. Naesmyth Webb. Mr. Philip Sturdy, architect:—

Hoare & Sons	£1,695	Norman & Sons,* Blandford	£1,425
Brown & Sons	1,578	J. Nichol	1,045
W. Hoare	1,477		

* Accepted.

Carno (Wales).—For the erection of a new C.M. chapel at Carno:—

E. Davies & Son, Newtown	£2 493	0
E. C. Phillips Newtown	1,900	0
E. H. Williams, Llanbrynmair	1 630	0
J. J. Meredith,* Llanidloes	1,627	10

* Accepted.

Colwyn Bay.—For sewerage and sewage-disposal works, for the Urban District Council: (Contract No. 1) construction of cast-iron pipe sea outfall, contrete reservoir, erection of cottage, pumping station buildings and machinery capable of lifting 465 000 gals. of sewage per hour, construction of about 2¾ miles of brick and concrete sewers and 4 miles of pipe sewers with all manholes and other works in connection with the sewerage and sewage-disposal of Colwyn Bay, Colwyn, Rhos, and part of Lysfaen, in the counties of Denbigh and Carnarvon. Messrs. Pritchard, Green & Co., engineers, 37, Waterloo Street, Birmingham:—

J. Best, Edinburgh	£108,868	10	0
G. Law, Kidderminster	83,000	0	0
J. Strachan, Cardiff	79,500	0	0
McKee & McNally Dungannon	71,402	0	0
W. Jones & Sons, Neath	69,369	18	10
J. S. Dawson, Buxton	68.401	3	6
Nowell & Son, Charlton-cum-Hardy	64,994	0	0
Johnson & Langley, Leicester	63,900	0	0
J. & T. Binns, Croydon	62,869	8	10
B. Cooke & Co., Westminster	57 990	0	0
Underwood & Brother,* Dukinfield	55,276	0	0
J. Moffat, Manchester	49,550	11	7

[Engineer's estimate, £58,913 5s. 7d.]

* Accepted.

Colwyn Bay.—For new promenades and foreshore improvement works, for the Colwyn Bay Urban District Council. Mr. W. Jones, A.M.I.C.E., engineer and surveyor:—

	Promenade No. 1.	No. 2.	No. 3.
J. & M. Patrick, London	£35,934	£15,572	£18,304
T. Dent & Sons, Nelson	—	—	17,310
Bower Brothers, West Bridgford	32,545	11,218	14,303
Turner, Heason & Mitchell, Manchester	30,130	9,339	11,028
Johnson & Langley,† Leicester	30,049	-	—
W. Kennedy, Glasgow	29,868	12,226	15,172
E. Nuttall, Manchester	27,365	11,025	14.042
L. Roberts, Llandudno	26,464	7,135	10,806
J. & T. Binns, Croydon	22,707	8,866	11,106
J. Moffat, Manchester	22,637	8,130	10,803
R. C. Bremner & Co., Edinburgh	22,227	6,798	10,343
Pethick Brothers, London	21,899	7,419	9.322
McKee & McNally, Ireland	21,653	7,599	10,795
Nowell & Sons. London	20,560	6,912	9 275
J. Strachan, Cardiff	20,505	7,431	9,646
E R. Lester, Plymouth	20.503	7.356	9 240
W. Jones & Sons, Neath	20,176	6,578	8,505
G. Law, Kidderminster	20,126	7,188	8,685
J. S. Dawson, Blackpool	19,399	5,749	8,865
Public Works Co., London	19,056	7,420	8,695
Underwood & Brother,* Dukinfield	18,757	6,691	8,903
R. Finnagan, Northampton	18,589	6,521	9,044
G. Bell, Manchester	16,803	6,585	8,689
Dixon & Co., Bradford	17,224	5 615	7,429
[Engineer's estimate,	20,000	8,500	8,554.]

* Accepted. † Not complied with conditions.

Convoy (co. Donegal).—For erection and completion of a new Presbyterian church at Convoy. Mr. John M'Intyre, architect, Letterkenny:—

S. Donnell & Co., Strabane, co. Tyrone	£1,695	0
D M. Coffrey, Strabane, co. Tyrone	1,435	0
J. M. Clay, Strabane, co. Tyrone	1,412	7
S. Wood,* Ballybofey, co. Donegal	1,264	10

* Accepted.

Dartford.—For additions to West Hill Board School, Dartford. Mr. Henry Hall, architect, 19, Doughty Street, London, W.C.:—

Lowe	£4,251	Ennis Brothers	£4,041
Bowyer	4,110	Gates	4 040
Marriage & Co.	4,078	Smith & Sons,*Croydon	3,893
Gough & Co.	4,074		
Jerrard & Sons	4,070		

* Accepted.

East Cowes (I.W.).—For sinking a well 150ft, and lining same with brickwork, for the Urban District Council. Mr. W. Brown, engineer, 709, High Road, Tottenham, N.:—

Hill & Co.	£3,180	0
Duke & Ockenden	2,992	10
W. G. Brown, Tottenham	2,069	0

* Accepted.

Ely, Cardiff.—For alterations to buildings at Ely for the Cardiff Board of Guardians:—

Lattey & Co., Ltd.	£3,777	16	8
G. Burgess	3,725	0	0
A. W. Cadwallader	3,100	0	0
J. Gibson	2,944	0	0
Knox & Wells	2,899	0	0
U. Thomas & Co.	2,873	0	0
J. Allan & Sons	2,707	6	0
Price Brothers	2,690	0	0
C. Beames & Nephew	2,620	0	0
E. Turner & Sons	2,448	0	0
W. T. Morgan	2,425	0	0
Blacker Brothers	2,357	0	0
W. Symonds & Co.	2,258	1	5
C. C. Dunn*	2,126	2	6

* Accepted.

Hull.—For the erection of a junior department at the Northumberland Avenue Board School, for the School Board:—

Amalgamated Builders, Ltd.	£6.552	9	1
T. Bilton	5,896	7	6
H. T. Arnott	5,700	11	3
J. Houlton & Son	5.571	0	0
F. Southern	5.427	16	6
E. Good & Son, Ltd.	5,402	11	8
W Hodgson	5,390	13	4
M. Harper	5,297	0	0
G. Jackson & Sons	5,173	6	5
J. T. Levitt	5,120	0	0
J. R. Woods	5,083	14	4
T. Goates	5,000	0	0
J. Simpson & Son	4,980	5	1
F. Bielby*	4,879	0	0
Hull General Builders, Ltd. (incomplete)	3,880	0	0

* Accepted. [All of Hull.]

Ipswich.—For erecting new probationary house, Britannia Road, Ipswich, for the Guardians. Mr. Henry J. Wright, M.S A., architect, 4, Museum Street, Ipswich. Quantities by architect:—

Spencer, Santo & Co., Felixstowe	£2,775	0	0
Cooper & Haward	2.674	16	0
F. Bennett	2,670	0	0
G. Burgoyne	2 650	1	7
C. Stearn & Co.	2 617	0	0
S. Skerrit	2,611	16	0
C. A. Green	2,586	0	0
W. H. Death	2,574	0	0
W. Greyston	2,550	0	0
A. Sadler	2,548	0	0
M. Death	2,535	0	0
V. A. Marriott	2,500	0	0
G. Grimwood & Sons	2,473	0	0
H. J. Linzell	2,437	0	0
C. Roper	2,388	0	0
W. H. Bloomfield	2,385	0	0
E. G. Haggar	2,360	0	0
Parkington & Son*	2,350	0	0

* Accepted. [Rest of Ipswich.]

London, N.—For postal stores building (Islingtou, N.) foundations, for H.M. Office of Works:—

	A.	B.	C.	D.
J. Thompson & Co.	£10,980	£11,130	£50	4s. 0d.
C. Dearing & Son	10,518	10,997	12	3 0
Foster Brothers	9,360	9,518	—	—
Todd & Newman	8,975	9,275	—	1 0
J. Willmott & Son	8,742	8,957	60	2 0
J. Chessum & Son	8,715	9,085	5	1 0
Perry & Co.	8,550	8,715	18	2 0
H. Wall & Co.	9,536	8,632	10	4 0
W. Pattinson & Sons	8,527	8,732	93	2 0
Sabey & Son	8,390	8,547	—	2 0
J. E. Johnson & Son	8,147	8,276	25	3 6
J. Shelbourne & Co.	8,114	8.269	100	3 0
J. Mowlem & Co.	8,082	8,145	—	1 0
F. G. Minter	8,052	8,217	—	2 9
E. Lawrence & Sons	8,022	8,276	—	—
J. F. M. Patrick	7,999	8,109	—	—
G. Munday & Son	7,982	8,187	69	2 0
B. E. Nightingale	7,979	8,085	—	3 0
Martin, Wells & Co., Ltd.	7,850	8 050	—	1 6
Kirk & Randall	7,845	8,100	132	2 6
W. H. Lorden & Son	7,777	7,866	10	3 0
J. Grover & Son	7,680	7,995	--	2 6
Perry Brothers	7,677	7,411	12	2 0
H. L. Holloway	7,426	7.567	15	2 6
Treasure & Son	7,373	7,537	20	1 0
W. Lawrence & Son	6 996	7,116	25	2 0
Dove Brothers	6.955	7,245	25	5 0
W. King & Son*	6 773	6,965	50	3 6
H. J. Williams	6,687	6,975	2	1 0

A, Walls executed in concrete B, Walls executed in brickwork. C, Allowance for old materials. D, Allowance for gravel left on site, per cub. yd.

* Accepted.

London, N.E.—For condensing plant, for the Hackney Borough Council:—

Coles, Marchant & Morden, Ltd.	£2,758
Pulsometer Engineering Co., Ltd.	2,681
Bertrams, Ltd.	2,656
Alley & MacLellan	2,471
Ashton, Frost & Co., Ltd.	2,445
Richardson, Westgarth & Co., Ltd.*	2,438
Bertrams, Ltd. (alternative with German motor)	2,366

* Accepted.

London, N.—For fire hydrants, main and pump at the Northern Hospital, for the Metropolitan Asylums Board:—

J. Milne & Son, Ltd., Edinburgh	£2,556	15	6
W. J. Fraser & Co.	2,238	7	0
Merryweather & Sons, S.E.	2,233	0	0
H. F. Joel & Co. and T. Fotter & Son, United, Ltd, W.	1,998	0	0
J. Blakeborough & Sons, Brighouse	1,925	0	0
Rosser & Russell, Ltd., S W.	1,914	10	0
J. & F. May, Lincoln's Inn Fields, W.C.	1,863	10	0
B. Rhodes & Son, London, E.	1,850	0	0
R. Harding & Son, Brixton, S.W.	1,699	19	0

[Engineer's revised estimate, £1,600.]

London, W.—For sewering, levelling, paving, metalling, flagging, channelling, providing means of lighting, and making up the following streets, for the Hanwell Urban District Council, viz.: (1) Studley Grange Road. (2) St. Margaret's Road (part of). Mr. S. W. Barnes, A.M.I.C.E., surveyor:—

St. Margaret's Road.

R. Ballard, Ltd., Kilburn	£992	12	0
B. Nowell & Co., Kensington	894	15	10
Felkin & Watson, Southall	849	12	4
T. Free & Son, Maidenhead	8,8	11	7
J. Mowlem & Co., Westminster	832	0	0
W. Neave & Son, Kensal Rise	751	0	0
M. Morecroft, Acton Green, W.	740	0	0
J. Macklin,* Hanwell, W.	702	14	9

[Surveyor's estimate, £881 11s. 7d.]

Studley Grange Road.

R. Ballard, Ltd.	£1,952	10	1
B. Nowell & Co.	1,737	16	1
Felkin & Watson	1,696	9	4
T. Free & Son	1,663	8	8
J. Mowlem & Co.	1,584	0	0
W. Neave & Son	1,447	0	0
H. Morecroft	1,772	0	0
J. Macklin*	1,346	16	6

* Accepted. [Surveyor's estimate, £1,704 6s.]

Longton (Staffs).—For the forming, channelling, kerbing, paving, sewering, &c., of Sutherland Road and Weston Colney Road from east side to the tollgate, near to the Cinderhill Hotel, for the Town Council. Mr. J. W. Wardle, A.M.I.C.E., borough surveyor:—

A. T. Brown, Longton	£2,603	6	2
T. Tucker, Burslem	2,532	6	10
Smith & Taylor, Stoke-on-Trent	2,364	0	0
W. Williams, Stoke-on-Trent	2,244	0	0
F. Barke, Stoke-on-Trent	2,038	0	0
J. Bassett,* Strongford, Tittensor, Stoke-on-Trent	1,939	14	0

* Accepted.

Ravensthorpe (Yorks).—For the excavating, concreting and paving the Dewsbury and Elland main road, for the Ravensthorpe Urban District Council. Mr. Fred Greenwood, surveyor:—

G. Whitehead, Dewsbury	£6,075	0
W. Wilson, Glasgow	4,650	0
Dick, Kerr & Co., Ltd., London	4,100	0
A. Graham & Son, Huddersfield	3,850	0
Brookes, Ltd., Halifax	3,595	0
J. Brunton, Hull	3,575	9
W. Keighley, Leeds	3,375	0
M. Hall & Son, Bradford	3,350	0
S. Coop & Son, Dewsbury	3,250	0
J. Speight, Leeds	2,900	0
Turner, Heason & Mitchell, Manchester	2,862	10
Riley Brothers & Hartley, Sowerby Bridge	2,325	0

* Accepted.

Rowley Regis.—For erection of the Siviter's Lane Board School at Rowley Regis, for 300 boys and girls, mixed, and 300 infants, together with cookery, laundry and manual training rooms for the Rowley Regis School Board. Meredith & Pritchard, architects, Bank Buildings, Kidderminster:—

G. H. Eastwood, Market Harborough	£11,600
F. L. Jones, Wolverhampton	10,850
J. A. Meredith, Cradley	10,352
J. T. Beach, Birmingham	10,094
H. Smith Wolverley	9,881
C. A. Horton, Brierley Hill	9,760
J. Bridgewater, Cradley Heath	9,647
J. Herbert, Wolverhampton	9,590
J. Guest & Son, Stourbridge	9,470
R. Thompson, Kidderminster	9,490
W. Willets & Sons, Old Hill	9,273
J. F. Bloomer. Bradley	9,250
C. Griffiths, Stourbridge	9,157
Oakley & Coulson, Dudley	9,137
E. Hadley & Sons, Old Hill	9,088
T. Vale, Stourport	8,975
J. Dallow, Blackheath	8,725
H. Dorse & Co.,* Cradley Heath	8,375

* Accepted.

Sheffield.—For rebuilding the Red Lion Hotel, Duke Street, Park, Sheffield, for Messrs. the Directors of Thomas Rawson & Co., Ltd. Messrs. Hall & Fenton, architects and surveyors, 14, St. James's Row, Sheffield. Quantities by the architects:—

J. W. Dickens	£1,400	4	5
J. Margerrison, Dronfield	1,400	0	0
G. Allen	1,380	0	0
Martin & Hughes	1,364	0	0
J. H. Lilleker	1,351	15	9
J. Musson	1,351	12	0
R. H. Roberts	1,349	0	0
H. White	1,347	10	0
M. Hancock,* 71, Roebuck Road	1,168	0	0

* Accepted. [Rest of Sheffield.]

Sheffield.—For two sale shops and workshops, Sheffield Moor, Rockingham Lane, and Horse Lane, for Messrs. Roberts Brothers Messrs. Hall & Fenton, architects and surveyors, 14, St. James's Row, Sheffield. Quantities by the architects:—

J. Moran	£3,403	0	0
E. B. Dyson & Son, Heeley	3,300	0	0
Hollingworth & Bedford	3,212	13	5
J. Vasey & Son	3,188	0	0
J. Musson	3,180	0	0
J. White & Son	3,154	0	0
A. Bradbury	3,109	0	0
B. Powell & Sons	3,105	0	0
J. Mastin & Son,* Cavendish Street	3,099	0	0
T. Wilkinson & Son, Heeley	3,007	10	0
W. Chandler	3,006	0	0
M. Hancock	2,933	0	0
M. A. Earl	2,915	0	0

* Accepted.

Slough.—For the erection and completion of a school building in the Queen's Road, Stoke Road, Slough, for the Slough School Board. Messrs. Lee & Farr, architects, Slough:—

G. Tucker, Reading	£4,339
A. Reavell, Windsor	3,919
H. Burfoot, Windsor	3,850
Butcher & Hendry, Windsor	3,795
E. Chamberlain, Addleston	3,735
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Cooper & Sons, Windsor	3,642
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Lane & Son, Colnbrook	2,540
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J. & J. Jones, Southend-on-Sea	1,670	3	5
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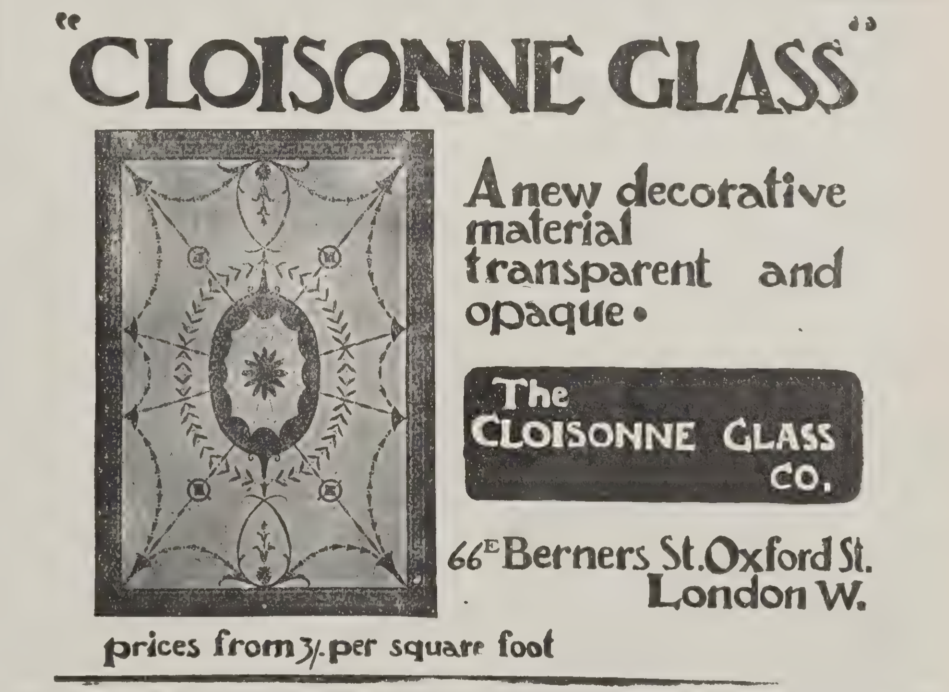
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" 14	Walsall—Orphanage Buildings	R.A.O.B. Orphanage Fund	F. W. Mager, Honorary Architect, Walsall.
" 14	Dereham, Cumberland—Rebuilding Farm Buildings	——	J. S. Moffat, 53 Church Street, Whitehaven.
" 14	Flimby. Cumberland—Six Houses	Maryport Co-op. Industrial Soc.	C. Eaglesfield, Architect, Maryport.
" 14	Gillingham. Kent—Chapel, Lodge, &c.	Burial Board	F. Smith, 10 Gardiner Street, New Brompton.
" 14	Kilkenny—Sanitary Annexes to Workhouse	Guardians	R. Comerford, Clerk of Union, Kilkenny.
" 14	Londonderry—Rebuilding Premises	Rosborough & Co.	R. E. Buchanan, Architect, Castle Street, Londonderry.
" 14	Rhymney, Mon—Repairing, &c., Inns	Buchan & Co.	T. Edwards, Rhymney Brewery, Rhymney
" 14	Brighton—Artizans' Dwellings	Corporation	F. J. C. May, Borough Engineer, Town Hall, Brighton.
" 14	Huddersfield—Two Dwelling-Houses	——	J. Kirk & Sons, Architects, Huddersfield.
" 15	Dodwerth. near Barnsley—Church	——	G. Moxon, Central Chambers, 26 Church Street, Barnsley.
" 15	Pulham Market. Norfolk—Alterations to Workhouse	Deepwade Union Guardians	A. Clarke, 126 London Road. Lowestoft.
" 15	Workington—Shop, Hall and House	—	W. G. Scott & Co., Architects Victoria Buildings, Workington
" 15	Edinburgh—Cement, Pitch, &c.	Tramways Committee	J. E. Pitcairn, 1 South Charlotte Street, Edinburgh.
" 15	Longwood—Ten Dwelling Houses	——	P. Taylor & Co., Architects, Central Buildings, Milnsbridge.
" 15	Hayle, Cornwall—Two Houses	——	"Royal Standard" Inn, Hayle.
" 15	Truro—Three Houses	Palmer & Cundy	S. Hill. Architect, Redruth.
" 16	Glasgow—Library	Corporation	J. R. Rhind, 43 Hope Street, Glasgow.
" 16	Wigmore, West Bromwich—Boiler-House, &c.	School Board	H. J. T. Piercy, 53–54 Broad Street, Birmingham.
" 16	Longsight. Manchester—Three Shops	——	T. George & Son Architects. Old Square. Ashton under-Lyne.
" 16	Aberdare—Alterations. &c., to Hotel	Markets and Town Hall Co.	Ll. Smith & Davies. Architects. Aberdare.
" 16	Boston, Lincs—Alterations, &c.. to School	School Board	J. Rowell, Borough Surveyor's Office, Boston.
" 16	Leeds—Extensions of Nurses' Homes &c.	Guardians	J. Winn & Sons, 92 Albion Street, Leeds.
" 16	Blaengarw. Wales—Alterations, &c.. to Villas	Conservative Club	R. J. Richards, Conservative Agent, Port Talbot.
" 16	Bulcote. near Nottingham—Farm Buildings	Stoke Farm Committee	A. Brown, City Engineer. Nottingham.
" 16	Glasgow—Warehouses, &c.	Corporation	Thomson & Sandilands, 241 West George Street, Glasgow.
" 16	Heanor Schools	——	A. Marshall, Architect King Street, Nottingham.
" 16	Pontypridd—Thirty-five Houses	Pwllgwaun Building Club	A. O. Evans, Architect, Pontypridd.
" 16	New Tredegar—Forty-eight Houses	Coronation Building Club	Architect's Office. Station Road, Bargoed.
" 16	Tumble, Wales—Chapel	——	W. Griffiths, Architect, Llanelly.
" 18	Birmingham—Additions to Kitchen and Sculleries	Guardians	W. H. Ward, Architect, Paradise Street. Birmingham.
" 18	Dipton, Durham—Three Houses	——	G. Nicholson, Contractor Chopwell View, Dinton.
" 18	Glass Houghton—Extensions, &c.. to School	School Board	R. M. McDowall, Architect Carlton Street. Castleford.
" 18	Southampton—Superstructure to Electricity Station	Corporation	J. A. Crowther, Borough Engineer, Municipal Offices, Southampton
" 18	Tredegar, Mon.—Hospital	——	E. A. Johnson, Architect. Merthyr
" 18	Warwick—Extensions &c., to Wards	Joint Hospital Board	F. P. Trepess, 1 Church Street, Warwick.
" 18	Workington—Public Library	Library Committee	Borough Surveyor, Town Hall, Workington.
" 18	Wimborne—Rebuilding Chapel	——	H. Shears, Chalbury.
" 18	Royton. Lancs—Police Station, &c.	County Council	H. Littler, Architect, County Offices. Preston.
" 18	Newcastle upon-Tyne—Workmen's Dwellings	Town Improvement Committee	Liddle & Browne. Prudential Bldgs. Mosley St.,Newcastle-on-Tyne.
" 18	Bradford—School Alterations &c	School Board	Board's Architect, Manor Row, Bradford.
" 19	Lewisham, S.E.—Walls, Cart Shed, &c.	Borough Council	Surveyor. Town Hall, Catford. S E.
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" 19	London, E.C.—Patent Office	Commnrs. of H.M. Works	J. Westcott. H.M. Office of Works, Storey's Gate. London, S.W.
" 19	Brentford Free Library	Council	N Parr. Clifden House, Boston Road, Brentford.
" 19	Cavan, Ireland—Repairs to Houses	Urban District Council	T. M'Gwinness, Clerk, Council Offices, Cavan.
" 19	Atherstone—Additions. &c., to Workhouse	Guardians	J. W. Godderidge, 4 Bolebridge Street, Tamworth.
" 19	Barry Dock. Cardiff—Church	Rev. J S. Longdon	G. E. Halliday, Architect, Cardiff.
" 19	Bradford—Masonwork to Bank	Corporation	J. H. Cox. City Surveyor, Town Hall, Bradford.
" 19	Keighley—Ten Dwelling-houses	——	Barber, Hopkinson & Co.. Architects, Craven Bank Chmbrs.. North Street. Keighley.
" 19	London, W.—Demolition of Atlas Works	Paddington Guardians	F. J. Smith, Parliament Mansions, Victoria Street, Westminster.
" 20	Blaenavon, Mon.—Altering. &c, Church	Baptist Church Trustees	G. C. Hillard, Architects, Market Chambers, Abertillery.
" 20	North Somercotes, Lincs—Chapel and Schoolroom	——	W. C. Street, Corn Market, Louth.
" 20	Rochdale—Repairs. &c., to Roof	Gas Committee	J. Leach. Clerk. Town Hall, Rochdale.
" 20	Seighford -Restoration of Church	——	Vicar, Seighford.
" 20	Wisbech -Rebuilding Public-House	Elgood & Sons	W. H. H. Davis, 2 York Row, Wisbech.
" 20	Seacombe Ferry—Engine and Boiler-House	Wallasey U.D.C.	Wood & Fowler, 3 Cook Street. Liverpool.
" 21	Conway—Lavatories Fire Staircase, &c.	Guardians	T. B. Farrington, Architect, Trinity Square, Llandudno.
" 21	Woolwich—Public Library	Borough Council	F. Sumner, Borough Engineer. Maxey Road, Plumstead.
" 21	Wyke, Yorks—Seven Houses	——	R. Berry Architect, Commercial Street, Halifax.
" 22	Hull—Superstructure of Buildings	Property Committee	J. H. Hirst. City Architect, Town Hall, Hull.
" 22	Walney Island. Barrow in-Furness—Chapel	——	J. F. Curwen, 26 Highgate, Kendal.
" 22	London, W.—Alterations to Town Hall	St. Marylebone Borough Council	J. P. Waddington, Engineer, Town Hall. Marylebone Lane, W.
" 25	Ramsgate—Superstructure of Pavilion, &c.	Corporation	E. B. Sharpley. Town Clerk, Albion House, Ramsgate.
" 26	London, N.—Fourteen Rows of Cottage Dwellings	London County Council	Housing Section, Architect's Dprtmnt. 19 Charing Cross Rd., W C.
" 26	Tilbury Docks, Essex—School and House	Chadwell St. Mary School Board	J. Thompson, 12 St. Vincent's Road Southend-on-Sea.
" 26	Hendon—Newspaper Repository	Commnrs of H.M. Works. &c.	Secretary, H.M. Office of Works, &c., Storey's Gate, S.W.
" 26	Knightsbridge—Post Office	Commnrs. of H.M. Works, &c.	Secretary H.M. Office of Works, &c., Storey's Gate, S.W.
June 24	Whitchurch, near Cardiff—Superstructure of Asylum	Cardiff Corporation	Oatley & Skinner, Architects, Edinburgh Chambers, Baldwin Street. Bristol.
No date	West Drayton, Middlesex—Steel Foundry	——	Tapp & Jones, 1 Prince's Street, Great George Street, Westminster.
	ENGINEERING		
May 14	Walker, Northumberland—Brick and Steel Bridge	Corporation	City Engineer, Town Hall, Newcastle-on-Tyne
" 14	Leicester—Brick and Girder Bridge	Highway Sewerage Committee	E. G. Mawbey, Borough Engineer, Town Hall. Leicester.
" 14	Newcastle-on-Tyne—Brickwork and Steelwork to Bridge	Corporation	City Engineer, Town Hall, Newcastle-on-Tyne.
" 15	Edinburgh—Engineering Work and Electrical Stores	Tramways Committee	J. E. Pitcairn, 1 South Charlotte Street Edinburgh.
" 15	Letterkenny—Water Supply	——	J. Robinson & Son, Auctioneers, Letterkenny.
" 16	Felixstowe—Cables, Arc Lamps, Poles, &c.	Urban District Council	R. P. Wilson, 66 Victoria Street, Westminster.
" 16	Ballinasloe, Ireland—Disinfecting Press	Guardians	R. J. Gill, Clerk, Ballinasloe.
" 16	Coylton, Drongan—Masonry Abutments of Bridge	Ayr District Committee	D. W. Shaw, Clerk to District Committee, Ayr.
" 16	Shotton Colliery, Durham—Extension of Sidings	——	Manager, Shotton Colliery.
" 18	Govan. Scotland—Dynamos, Boilers &c.	Town Council	T. C. Parsons, Burgh Electrical Engineer, Helen Street Govan.
" 18	Ball's Bridge. co Dublin—Widening, &c., Bridge	Pembroke U.D.C.	J. C. Manley, Clerk, Town Hall, Ball's Bridge, co. Dublin.
" 18	Chipping Norton—Water Supply Works	Rural District Council	Sanitary Inspector, Sheep Street, Charlbury.
" 18	Chorley, Lancs—Steel Girder Bridge	Corporation	W. Leigh, Borough Surveyor. Town Hall, Chorley.
" 18	Erith. Kent Heating Hospital by Hot-Water	Urban District Council	Surveyor. Council Offices, Bexley Road, Erith.
" 18	Plymouth—Cooking Apparatus	Guardians	F. C. Hellings, Master, Workhouse. Gollenbank Road, Plymouth.
" 19	London, W.—Welsbach Burners, &c.	Acton District Council	D. J. Ebbetts, 242 High Street, Acton.
" 19	Cavan—Bridge	Urban District Council	T. M'Guinness, Clerk, Council's Offices, Cavan.

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„	19	London, E.C.—Locomotives, &c.	South London Railway Co.	Company's Offices, 55 Gracechurch Street, London, E.C.
„	20	London, W.—Sewage Pumping Plant, &c.	Urban District Council	E. F. Collins, Clerk, Town Hall, Chiswick.
„	20	Liscard, Cheshire—Electrical Meters, Switches, &c.	Wallasey Urban District Council	J. A. Crowther, Engineer, Public Offices, Egremont.
„	20	Liscard, Cheshire—Electricity Stores	Wallasey Urban District Council	J. A. Crowther, Engineer, Public Offices, Egremont.
„	21	Ware, Herts—Pumps, Gas Engine, &c.	Urban District Council	J. E. Smales, Surveyor, New Road, Ware.
„	23	Eccles, Lancs—Crane	Corporation	H. W. Angus, Borough Electrical Engineer, Cawdor Street, Patricroft.
„	30	Foots Cray, Kent—Electric Lighting	Urban District Council	A. E. Leonard, Clerk. Council Offices, Sidcup, Kent.
June	8	Brighton—Electrical Plant	Town Council	A. Wright, Star Chambers 30 Moorgate Street, E.C.
„	15	Ghiza—Electric Power Supply	———	Commercial Intelligence Branch B. of T., 50 Parliament St., S.W.
July	1	Rangoon—Electric Supply Undertaking	Municipal Committee	Ogilvy, Gillanders & Co., 67 Cornhill. E.C.
„	1	Penybont, Wales—Sewerage Works	Rural District Council	Burnett & Hurley, 10 Bridgend Rd., Tondu, Aberkenfig, Glamorgan
		FURNITURE:		
May	14	Bridlington—Seats	Property Committee	Borough Surveyor, Town Hall, Bridlington.
„	18	Wolverhampton—Chairs, &c.	Guardians	Master of Workhouse, Bilston Road, Wolverhampton.
		IRON AND STEEL:		
May	14	Freshwater and Totland, I.W.—Castings, Pipes, Manholes, &c.	Isle of Wight R.D.C.	W. B. G. Bennett, Son & Berry, Midland Bank Chrs., Southampton.
„	15	Edinburgh—Ironmongery, Tools, &c.	Tramways Committee	J. E. Pitcairn, 1 South Charlotte Street, Edinburgh.
„	16	Leigh, Lancs—Pipes	Gas and Water Committee	J. Gibson, Gas and Waterworks Offices, Leigh, Lancashire.
„	16	Macclesfield—Tubes and Fittings, Mains, &c.	Gas Committee	Engineer, Gasworks, Macclesfield.
„	16	Dundee—Castings, &c.	Water Commissioners	G. Baxter, 93 Commercial Street, Dundee.
„	19	London, E.C.—Railway Stores	S. Indian Railway Co., Ltd.	Company's Offices, 55 Gracechurch Street, London.
„	20	Gainsborough—Pipes	Urban District Council	R. W. Fraser, Engineer, Waterworks, Gainsborough.
„	20	Liscard, Cheshire—Wrought Iron and Steel, &c.	Wallasey Urban District Council	J. A. Crowther, Engineer, Public Offices, Egremont.
„	20	Hove, Sussex—Ironmongery, Pipes &c.	Corporation	H. H. Scott, Borough Surveyor, Town Hall, Hove.
„	20	Liscard, Cheshire—Firebars, Iron and Steel, &c.	Wallasey U.D.C.	J. A. Crowther, Engineer, Public Offices, Egremont.
„	22	Spilsby—Tools	Rural District Council	T. A. Busbridge, District Surveyor, Spilsby.
„	27	North Walsham—Pipes	Urban District Council	J. S. Empson, Clerk, Council Offices, North Walsham.
June	8	Johannesburg—Rails, &c.	Municipality	Mordey & Dawbarn, 82 Victoria Street, London, S.W.
„	15	Bangkok, Siam—Permanent-way Materials	Royal Siamese State Railways	Director-General, Gehots, Bangkok.
„	15	Bangkok, Siam—Railway Stores	Royal Siamese State Railways	Siamese Legation, London.
		PAINTING AND PLUMBING:		
May	14	Rhymney—Painting, &c.	Buchan & Co.	T. Edwards, Rhymney Brewery, Rhymney.
„	15	Cardiff—Painting, &c.	Corporation	W. Harper, Engineer, Town Hall, Cardiff.
„	15	Farnham—Painting Railings, &c.	Burial Board	Mr. Elkins, Lodgekeeper, Cemetery, Farnham.
„	15	Edinburgh—Colour, Varnish, Brushes, &c.	Tramways Committee	J. E. Pitcairn, 1 South Charlotte Street, Edinburgh.
„	16	Cwmavon Port Talbot, Wales—Painting, &c., Chapel	———	F. B. Smith, Architect, Port Talbot, Wales.
„	16	Macclesfield—Oils, Paints, &c.	Gas Committee	Engineer, Gasworks, Macclesfield.
„	16	Macclesfield—Painting	Watch Committee	E. E. Adshead, Borough Engineer, Macclesfield.
„	20	Hove, Sussex—Paints, Varnishes, &c.	Corporation	H. H. Scott, Borough Surveyor, Town Hall, Hove.
„	21	Ashford, Middlesex—External Painting	West London School District Managers.	Superintendent, Schools, Ashford.
„	22	Cleckheaton—Painting and Decorating Chapel	———	Curator, Providence Place, Congregational Chapel, Cleckheaton.
June	2	London, W.—Painting, &c., at Infirmary	Paddington Guardians	E. H. Line, 8 Craig's Court, Charing Cross, W.C.
		ROADS AND CARTAGE:		
May	14	Glasgow—Asphalt Paving	Corporation	Office of Public Works, City Chambers, 64 Cochrane St., Glasgow.
„	14	Gravesend—Granite, &c.	Town Council	C. E. Hatten, Town Clerk, Court House, Gravesend.
„	14	Greenock—Footways	Corporation	Office of Public Works, Greenock.
„	14	London, N.E.—Making-up, &c.	Hackney Borough Council	N. Scorgie, Borough Engineer, Town Hall, Hackney, N.E.
„	14	London, W.—Making-up	Ealing Town Council	C. Jones, Borough Engineer, Town Hall, Ealing, W.
„	14	London, W.—Kerbing, &c.	Ealing Town Council	C. Jones, Borough Engineer, Town Hall, Ealing, W.
„	15	Castle Donington, near Derby—Materials	Rural District Council	F. E. Burton, Clerk, High Street, Castle Donington.
„	15	Rothwell, Northants—Granite, &c.	Urban District Council	W. T. Pearson, Surveyor Market House, Rothwell.
„	15	Wakefield—Granite, Slag, Winstone, &c.	Rural District Council	F. Massie, Tetley House, Wakefield.
„	15	Edinburgh—Gravel, &c.	Tramways Committee	J. E. Pitcairn, South Charlotte Street, Edinburgh.
„	16	Ayr—Altering and Embanking Road	District Committee	A. Stephenson, Road Surveyor, Ayr.
„	18	Erith, Kent—Street Works	Urban District Council	Council's Surveyor, Bexley Road, Erith.
„	18	Ham, Surrey—Granite, Flint, &c.	Urban District Council	W. Warner, Surveyor, Ham Common.
„	18	London, W.—Wood Paving	Borough Council	Borough Surveyor, Town Hall, Paddington, W.
„	18	Newmarket—Metalling	Rural District Council	S. J. Ennion, Clerk, Deva Chambers, Newmarket.
„	18	Romsey, Hants—Flints	Corporation	M. L. Harle, 2 Bell Street, Romsey.
„	18	Runcorn—Granite Macadam	Rural District Council	G. F. Ashton, Clerk, Runcorn.
„	18	Skipton, Yorks—Street Works	Urban District Council	J. Mallinson, Surveyor, Town Hall, Skipton.
„	18	Stevenage, Herts—Granite	Urban District Council	W. O. Times, Clerk, Council Offices Stevenage.
„	18	Paddington—Wood Paving Works	Borough Council	Borough Surveyor, Town Hall, Paddington, W.
„	19	London, E.C.—Wood Paving Works	Corporation	Engineer, Guildhall, E.C.
„	19	London, E.C.—Asphalt Paving Works	Corporation	Engineer, Guildhall, E.C.
„	19	Maldon, Essex—Granite, Flint, &c.	Corporation	T. R. Swales, Borough Surveyor, Maldon.
„	19	Cavan—Concrete Footpath	Urban District Council	T. M'Guinness, Clerk, Council's Office, Cavan.

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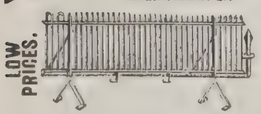

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Both Plain and Enamelled.
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LIMITED,
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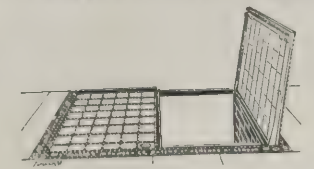
Stallboard Lights,



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Will be happy to forward, Post Free, their Catalogue of
IRON WINE BINS
STRONG ROOM FITTINGS,
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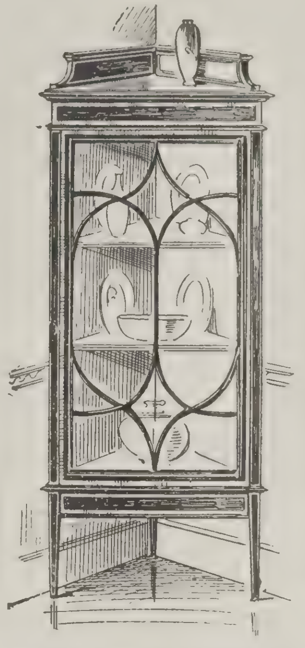
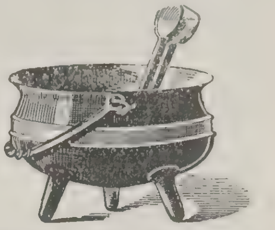
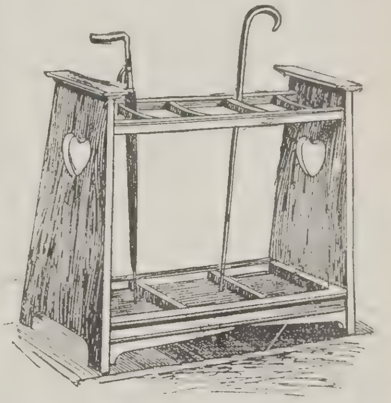


Handsome Inlaid Mahogany Sheraton Corner Cabinet, with elegant shaped door, the interior fitted with shelves for china, and lined throughout with silk - - - - - - - **£3 15s.**



Elegant Wrought-Iron Coal Cauldron, very strong, yet light to carry, with polished brass or copper band round body - - - **5/11**

Coal Tongs to match, black and brass, **1/11** per pair black and copper, **2/6** per pair.



Quaint Fumigated Oak Umbrella and Stick Stand, with japanned drip-tray - **15/9**

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In O.G., Half-round Angle, and other sections. Also PICTURE FRAME MOULDINGS. Shippers supplied. Largest Stock of Mouldings in the Kingdom. Send for Pattern Book. New Edition thoroughly revised and enlarged to 160 pages. JUST PUBLISHED, with all New Patterns and Designs up to date. Post Free for twelve penny stamps.
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6–11, Imperial Buildings, Ludgate Circus, London, E.C.

Complete List of Contracts Open—*continued.*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	ROADS AND CARTAGE—*cont.*		
May 19	Acton—Making-up Roads	District Council	D. J. Ebbets, 242 High Street, Acton.
,, 20	Kingston-upon-Thames—Making-up Road	Corporation	Borough Surveyor. Clattern House Kingston-on-Thames.
,, 20	Hove, Sussex—Granite, &c.	Corporation	H. H. Scott, Borough Surveyor, Town Hall, Hove.
,, 21	Croydon—Making-up	Rural District Council	E J. Gowen, Clerk Town Hall, Croydon.
,, 21	Ware, Herts—Road Improvement Works	Urban District Council	J. E. Smales, Surveyor, New Road Ware.
,, 26	Dartford—Making-up, &c.	Urban District Council	W. Harston. 8 Hythe Street. Dartford.
,, 26	West Ham—Making-up Streets	Borough Council	J. G. Morley, Borough Engineer, Town Hall, West Ham, E.
,, 28	Chatham—Granite, Flints, &c.	Corporation	C. Day, Borough Surveyor, Town Hall, Chatham.
	SANITARY:		
May 14	Freshwater and Totland, I.W.—Sewerage Works	Isle of Wight R.D.C.	W. B. G. Bennett, Son & Berry, Midlnd. Bnk. Chbrs., Southampton.
,, 14	Winslow, Bucks - Sewers, &c.	Rural District Council	H. A. Johnson, 15 The Exchange, Bradford, Yorks
,, 16	Harrogate—Sewers	——	E. W. Dixon, 5 Prospect Crescent, Harrogate.
,, 16	Macclesfield—Lime	Gas Committee	Engineer, Gasworks, Macclesfield.
,, 18	Cheltenham—Sewer, &c.	Corporation	Borough Surveyor, Municipal Offices. Cheltenham.
,, 18	Glasgow—Sewer	Corporation	City Engineer, City Chambers, 64 Cochrane Street, Glasgow.
,, 18	Stone, Staffs—Sewerage Works	Rural District Council	J. B. Norris, 21 High Street, Stone.
,, 19	Great Snoring, Norfolk—Drainage &c	Walsingham Guardians	C. Tuthill, Surveyor, Fakenham.
,, 19	Wakefield—Extension of Sewage Works	Joint Sewage Committee	F. Massie, Tetley House, Kirkgate, Wakefield.
,, 19	Bromley, Kent—Sewerage Works	Urban District Council	F. H. Norman, Clerk, Council Offices, Bromley, Kent.
,, 20	Cowdenbeath, Scotland—Sewage Purification Works	Town Council	Buchanan & Bennett, 12 Hill Street, Edinburgh.
,, 20	Hove, Sussex—Drain Pipes, &c.	Corporation	H. H Scott, Borough Surveyor, Town Hall, Hove.
,, 20	Dartford, Kent—Surface Water Drains, Manholes, &c.	Metropolitan Asylums Board	A. & C. Harston, 15 Leadenhall Street, E.C.
,, 21	Birkenhead—Lime	Corporation	A. Gill, Town Clerk, Town Hall Birkenhead.
,, 23	Upper Norwood, S.E.—Sewers, &c.	——	W. B. Hill, 81 Above Bar, Southampton.
,, 23	Iver, Bucks—Soakaways	School Board	W. Garner, Junr. 159, High Street, Uxbridge.
	TIMBER:		
May 15	Edinburgh—Timber	Tramways Committee	J. E. Pitcairn, 1 South Charlotte Street, Edinburgh.
,, 18	Dublin—Sleeper Blocks	Gt. Northern Rly. Co. (Ireland)	T. Morrison, Secretary, Amiens Street, Dublin.
,, 20	Hove, Sussex—Timber	Corporation	H. H. Scott, Borough Surveyor, Town Hall, Hove.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
May 30	Gillingham, Kent—Public Swimming & Slipper Baths	£20, £10, £5.	——	F. C. Boucher, Clerk to Gillingham U.D.C., New Brompton, Kent.
June 2	Abergavenny—Library (ltd. to Local Architects)	£20	——	E. H. Restall, Librarian, Town Hall, Abergavenny.
,, 18	Limerick—Library and Museum	£75, £25.	——	W. M. Nolan, Town Clerk, Town Hall, Limerick.
,, 23	Poplar, E.—Public Library	£75.	——	Borough Surveyor, Council Offices High Street, Poplar, E.

"FAVOURITE" DOOR HEAD.

Opening 2' 6" to 3' 0" Caps 10" × 12"

Price £1. Window Heads, from 5s.

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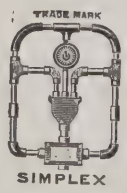

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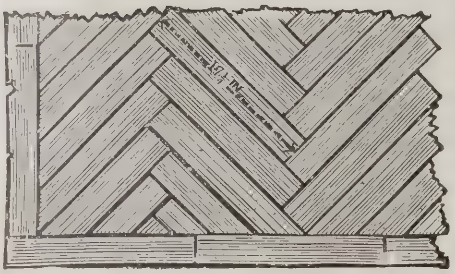
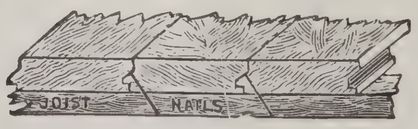


Per 100 Blocks out of sizes.	YELLOW.		PITCH PINE.
	At Wharf.	ex Ship within one month.	At Wharf.
17¼ × 3 × 3	12 11	12 9	17 10
17¼ × 3 × 2	8 11	8 2	12 7
17¼ × 3 × 1½	6 10	6 3	10 1



PRIME DRY OAK & PITCH PINE FLOORING

With Special Joint to conceal Nails—

1¼ × 4½ Oak, 56/9 Pitch Pine, 26 9 per square.
1 × 4½ ,, 45/6 ,, 22/6 ,,

These prices include desiccation.

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A large Stock of best Red Facings, Light, Medium, and Dark. Red Sand Faced. Also Stock of 100 Patterns Moulded Goods of all descriptions, including CHIMNEY POTS, RIDGE TILES, FLOOR TILES. Architects' own Designs to Order on shortest notice.

The South Lincolnshire Brick and Tile Co., Ltd., Bourne, Lincs.

Current Market Prices

FORAGE.

		£	s.	d.	£	s.	d
Beans	per qr.	1	9	9	1	12	3
Clover, best	per load	4	7	6	4	15	0
Hay, best	do.	3	15	0	5	10	0
Sainfoin mixture ..	do.	3	15	0	4	5	0
Straw	do.	1	8	0	1	18	0

OILS AND PAINTS.

		£	s.	d.	£	s.	d.
Castor Oil, French ..	per cwt.	1	1	0	1	2	2
Colza Oil, English ..	do.	1	4	0		—	
Copperas	per ton	2	2	6		—	
Lard Oil	per cwt.	2	15	0	2	17	0
Lead, white, ground, carbonate	do.	1	4	10	—		
Do. red	do.	1	0	4⅛			
Linseed Oil, barrels ..	do.	1	3	10½		—	
Petroleum, American ..	per gal.	0	0	5½	0	0	5⅝
Do. Russian .	do.	0	0	4	0	0	4⅛
Pitch	per barrel	0	8	0		—	
Shellac, orange	per cwt.	6	0	1		—	
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Home Melt ..	per cwt.	1	8	6	1	9	0
Tar, Stockholm	per barrel	1	1	6		—	
Turpentine	per cwt.	2	2	6		—	

METALS.

		£	s.	d.	£	s.	d.
Copper, sheet, strong ..	per ton	75	0	0		—	
Iron, Staffs., bar.. ..	do.	6	5	0	8	10	0
Do. Galvanised Corrugated sheet ..	do.	11	7	6	11	10	0
Lead, pig, Soft Foreign..	do.	12	0	0		—	
Do. do. English common brands ..	do.	12	5	0		—	
Do. sheet, English 3lb. per sq. ft and upwards ..	per ton	14	10	0		—	
Do. pipe	do.	15	0	0		—	
Nails, cut clasp, 3in to 6in.	do.	9	5	0		—	
Do. floor brads ..	do.	9	0	0		—	
Steel, Staffs., Girders and Angles	do.	5	15	0	6	7	6
Do. do. Mild bars ..	do.	6	12	6	7	2	6
Tin, Foreign	do.	136	15	0	137	5	0
Do. English ingots ..	do.	138	0	0	139	0	0
Zinc, sheets, Silesian ..	do	26	0	0		--	
Do. do. Vieille Montaigne	do.	26	5	0		—	
Do. Spelter	do.	21	15	0	22	0	0

TIMBER.

Soft Woods.

		£	s.	d.	£	s.	d.
Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow ..	do.	5	5	0	6	5	0
Do. Pitch	do.	3	0	0	3	4	0
Laths, log, Dantzic ..	per fath.	4	10	0	5	10	0
Do. Petersburg ..	do.	7	5	0		—	
Deals, Luleå, 1st Yellow, 3×9	do.	11	15	0		—	
Do. do. do. 2½×7	do.	9	0	0		—	
Do. Gefle, Yellow 3rd. 3×9	do.	17	5	0		—	
Do do. do. 4th, 3×9	do.	12	10	0		—	
Do. Archangel, 2nd Yellow, 3×11	do.	19	10	0		—	
Do. Trangsund, 4th Yell., 3×9	do.	7	0	0		—	
Do. Kotka, unsorted Yell., 4×12	do.	8	10	0		—	
Do. Oserko, inferior 5th Yellow, 3×9	do.	9	10	0		—	
Do. Carlsvik, unsorted Yellow, 3×9	do.	7	0	0		—	
Do. Pascagoula, prime pitch pine, 4×9	do.	14	0	0		—	
Do. do. do. 3×9	do.	12	0	0		—	
Do. Gothenburg, Yellow, 3×9	do.	14	10	0		—	
Do. Chemaines prime dry Oregon pine, unsorted, 3×15	do.	13	0	0		—	
Do. do. 3×12	do.	12	0	0		—	
Do. Libau, 1st and 2nd white, 3×11	do.	7	0	0		—	
Do. do. do. 3×9	do	8	15	0		—	
Do. do. do. 3×7	do.	8	0	0		—	
Do. do. do. 2½×9	do.	8	5	0		—	
Do. Quebec Spruce, 2nd, 3×9	do.	10	15	0		—	
Do. do. do. 3rd, 3×9×12ft.	do.	9	15	0		—	
Do. do. do. 4th, 3×9	do.	8	10	0		—	
Do. Quebec Red Pine, unsorted 3×11	do.	9	10	0		—	
Do. do. do. 3×10	do.	9	0	0		—	
Do. do. do. 3×8	do.	8	10	0		—	
Do. do. do. 3×7	do.	8	12	6		—	
Battens, all kinds ..	do.	6	10	0	12	0	0
Flooring Boards 1in. prepared, 1st	per square	0	10	9	0	13	0
Do. 2nd	do.	0	8	9	0	12	0
Do. 3rd &c.	do.	0	8	6	0	9	9

Hard Woods.

		£	s.	d.	£	s.	d.
Ash, Quebec	per load	3	12	6		—	
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	15	0	0	20	0	0
Cedar Cuba	per ft. sup.	0	0	5¼		—	
Do Honduras ..	do.	0	0	4 15/16		—	
Do Tobasco	do.	0	0	4 13/32		—	
Elm, Quebec	per load	4	0				
Mahogany, Average Price for Cargo. Honduras ..	per ft. sup.	0	0	6 11/32		—	
Do. Benin ..	do.	0	0	5 23/32	0	0	6 1/32
Do. St. Domingo	do.	0	0	3 23/32		—	
Do. Tobasco ..	do.	0	0	6 11/32	0	0	8 11/16
Do. Cuba ..	do.	0	0	8 19/32	0	4	4 1/16
Do. Lagos ..	do.	0	0	4⅜		—	
Oak, Dantzic and Memel	per load	3	5	0	3	15	0
Do. Quebec	do.	6	5	0		10	0
Teak Rangoon, planks..	do.	16	0	0	17	10	0

New Companies.

Depaco Wallpaper Co., Ltd Capital: £2,000 in £1 shares.

Chrystal Paint and Varnish Co, Ltd. Capital: £1,500 in £1 shares.

Sam Deards, Ltd., roofing contractors. glaziers, engineers, &c., 34, Old Broad Street, E.C. Capital: £5,000 in £1 shares.

Granitic Paint Co., Ltd., manufacturers of varnish colours, paints, &c. Capital: £5,000 in £1 shares (1,500 preference).

New York Lumber Co., Ltd., timber merchants, wood workers, contractors, &c., 23, Wormwood Street, E.C. Capital: £2,000 in £1 shares.

George W. Nelson, Ltd., stone merchants, brick and tile manufacturers. contractors, builders, masons, &c., 3, Harrison Road, Halifax. Capital: £5,000 in £1 shares

London Victoria Iron Co, Ltd., ironmongers, builders, painters, &c., 7, Heath Street, Hampstead. Capital: £2,000 in £1 shares.

John Sibley & Co., Ltd., ironmongers, hardware merchants, &c., 26, Gabriel's Hill, Maidstone. Capital: £30,000 in £1 shares (7,500 preference).

Peasenhurst Quarry Co., Ltd., stone, granite and marble merchants, dealers in cement, lime, gravel, &c., 37, St. Peter's Street, Stamford. Capital: £5,000 in £1 shares.

London and North-Western Property Co., Ltd., property owners, estate agents, painters, plumbers, decorators, contractors, &c., 22, Lord Street, Liverpool, and 181. Rice Lane, Walton, Lancashire. Capital: £10,000 in £1 shares (4,750 vendors and 5,250 guaranteed preference).

Coming Events.

Wednesday, May 13.

Institute of Sanitary Engineers, Ltd.—Meetings of General Purposes and Finance Committee at 4.15 p.m., Election Committee at 5.15 p.m., and Council at 7 p.m.

Thursday, May 14.

Society of Antiquaries of London.—Meeting at 8.30 p.m.

Institution of Electrical Engineers.—Discussion on Mr. A. D. Williamson's paper on "Applications of Electricity in Engineering and Shipbuilding Works," and Mr. A. B. Chatwood's paper on "Electric Driving in Machine Shops," 8 p.m.

Surveyors' Institution (Junior Section).—Dinner at the Trocadero Restaurant at 7 p.m.

Friday, May 15.

Art Workers' Guild.—Paper on "Lead Work," 8 p.m.

Architectural Association.—Members' Supper at the Hotel Great Central, Marylebone Road, at 7.30 p.m.

Society of Architects.—Annual Dinner, Grand Hall, Prince's Restaurant, at 6 30 p.m.

Saturday, May 16.

Edinburgh Architectural Association.—Visit to Stirling Church and Stirling Castle. Leader, Mr. J. T. Baillie.

Northern Architectural Association.—Students' Sketching Club Excursions.

Monday, May 18.

Surveyors' Institution.—Discussion on Mr. H Trustram Eve's paper on "Modern Methods of Valuation of Manurial Residues," 8 p.m

Royal Institute of British Architects.—Sir Martin Conway on "The Formation of the Ancient Style of Egyptian Architecture," 8 p.m.

Tuesday, May 19.

Society of Arts (Applied Arts Section).—Mr. Cyril Davenport on "Mezzotints," 4.30 p.m

Institution of Mechanical Engineers.—Conversazione at the Institution, Storey's Gate, St. James's Park, 9 p.m.

Wednesday, May 20.

Chemical Society.—Ordinary meeting at 5 30 p.m.

Thursday, May 21.

Glasgow Architectural Association.—Annual Excursion to Falkland Palace.

Society for the Encouragement of the Fine Arts.—Mr. Arthur Diosy. F.R.G.S., on "Our Allies in the Far East."

Home Arts and Industries Association. Exhibition at Royal Albert Hall at 2.30 to 7 p m Open until May 25th.

Saturday, May 23

British Institute of Certified Carpenters.—Visit to the New Gaiety Theatre, Strand, W.C., at 3 p.m.

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver.]

During the week ending May 9th eight failures in the building and timber trades in England and Wales were gazetted.

O. G. Pritchard, joiner and contractor, Liscard. R.O. May 1st.

E. Lee & Co., builders, Wealdstone. P.E., St. Albans C.C., May 26th, at 12.

J Dunn, road contractor, Harrogate. P.E. York Courts of Justice, June 5th, at 11.

Heatherley Brothers, contractors, Milford Haven and Pembroke Dock. R.O. April 27th.

E. Uphill, builder, Bath Gross liabilities £1,581 £1,376 to rank for dividend; deficiency £1,284.

D. Calder, contractor, Colwyn Bay. R.O. April 27th. First meeting, Crypt Chambers, Chester, May 13th, at 12. P.E., Bangor Magistrates' Room, June 4th, at 12 15.

F. Couzens, builder, Cardiff. First meeting, O.R.s, Cardiff, May 14th, at 12. P.E., Cardiff Town Hall, June 9th at 11.

G. Brown, builder, Anstey. Gross liabilities £4,810; £4,030 expected to rank for dividend; assets £2,342 deficiency £1,687.

A. D. Mitchell, builder, Derby. Gross liabilities £5,590; £1.421 to rank for dividend; assets £1,120; deficiency £319

A. Neesom, builder and contractor, Chorltum-cum-Hardy. £1,467 expected to rank for dividend; assets £13; deficiency £1,454.

T. Hunter, builder and contractor, Newcastle-on-Tyne. R O. April 29th. First meeting, O.R.'s, Newcastle, May 13th, at 11.30. P.E., Newcastle C.C., May 21st, at 11.

W. Flux, builder and undertaker, Newport, I.W. R.O. April 27th. First meeting, O.R.'s, Newport, May 13th, at 12. P.E., Newport Town Hall, May 25th, at 3.15.

James Bishop, stonemason, Bolton. R.O. May 1st First meeting, 19, Exchange Street, Bolton, May 15th, at 3. P.E., Bolton C.C., May 20th, at 3.30.

H. Bradby, lead, colour and varnish merchant, Brighton. R.O. April 28th. First meeting, O.R.'s, Brighton, May 13th, at 3. P.E., Brighton C.C., May 28th, at 11.

J. B. Platt, builder and contractor, Higher Hillgate, Stockport. R.O. April 28th. First meeting, O.R.'s, Stockport, May 14th, at 11. P.E., Stockport C.C., May 15th, at 11.

A Bankruptcy Petition has been presented by Mr. W. H. Brown, architect and surveyor, of Ipswich, against Mr. Samuel Sleigh, a former proprietor of the "Blue Boar Hotel," Cambridge.

The following companies are to be wound up:—

Devicolam Estates Co., Ltd., 12, St. Mary Axe E.C.

Royal Architectural Museum and Westminster School of Art. W. Pain, liquidator.

Shortwood Brick and Tile Co., Ltd. W. F Collins, Bath, liquidator.

Sussex Brick Co., Ltd.

A New Organ at St. Peter's Church Belfast, has been erected. The case, of carved oak, was specially designed and executed by Messrs. Harry Hems & Sons, of Exeter, under the supervision of the architect of the church, Mr. S. P. Close, A.R.H.A.

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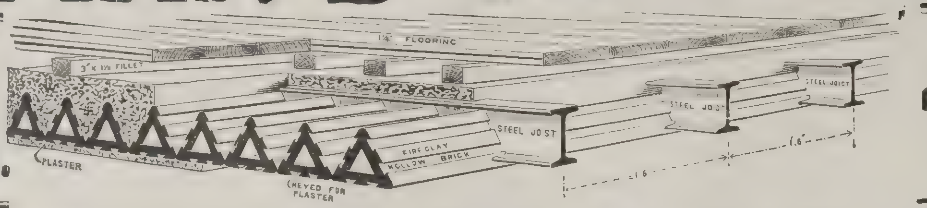

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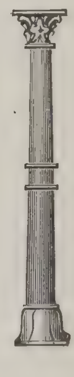

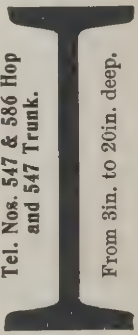

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THE
BUILDERS' JOURNAL
AND ARCHITECTURAL RECORD.

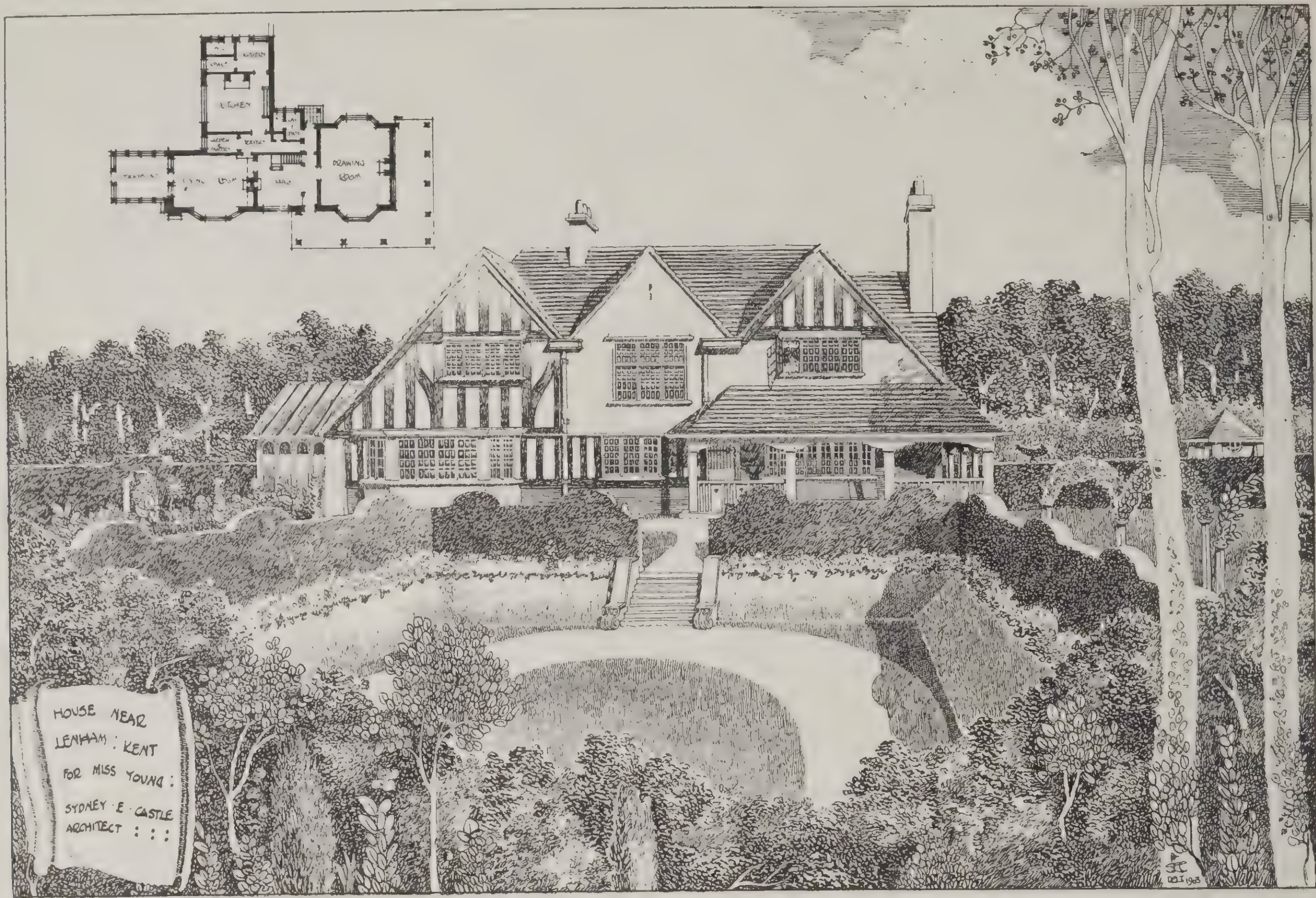
May 20, 1903. Vol. 17, No. 432.

9, East Harding Street, E.C.

Liverpool Cathedral Award. MR. BODLEY and Mr. Norman Shaw have not been long in delivering their award in the Liverpool Cathedral competition. It is only a fortnight since they went down to inspect the designs submitted by the five selected architects, and their report was presented to the meeting of the Executive Committee held on Friday last. They recommended the adoption of design No. 1, by Mr. G. Gilbert Scott, but the Committee decided not to accept any of the designs: so that the competition again proves futile. In drawing up their conditions the Committee made a strong point of securing ample room for the congregation within sight and hearing of the preacher; and thus it seems that they verge on an impossibility, for there is a limit to the range of human hearing, and that limit must inevitably be exceeded in a vast building. There is a gulf fixed between St. Paul's Cathedral and Spurgeon's Tabernacle with its three-decker galleries. But though the Committee have rejected all the designs, their assessors are very eulogistic of the one they have chosen. They say: "What we had to find was not the best or the most beautiful drawings, but the best idea and the finest conception. Many of the drawings are attractive. But we had to look much further than that. We had to look at the real effect of the building rising to its final completion, at the dimensions and proportions of the different parts, such as the piers and arches of the great nave. We had to look at the practical and feasible aspect of the designs. We had to look for a sufficiently original conception. We had to look for a fine and a noble proportion, combined with an evident knowledge of detail. Lastly, we had to look for that power, combined with beauty, that makes a great and noble building. In the set of drawings marked No. 1 we find these qualities preeminently shown. We cannot but give it the first place. We should recommend that the quasi east end should be drawn with the towers shown, and that a window of fine size and proportion should be shown for that gabled end, one suitable to receive the offered gift of stained glass, a gift that will greatly add to the beauty of the interior." Of the five competitors (respectively, Mr. G. Gilbert Scott, Messrs. Austin & Paley, Mr. C. A. Nicholson, Mr. W. J. Tapper and Mr. Malcolm Stark) four sent in designs for the cathedral in the preliminary competition, and the assessors note with great interest that the new designs embody much the same general design and character as before: thus showing that the views of their authors were decided. "This seems to us good evidence that from the commencement they had offered of their best." Mr. Scott's design shows a cathedral of a total length of about 480ft. and an extreme width of 200ft. across the transepts (which have large towers over them); the height of the nave is 110ft.; the choir is 120ft. long, with a square chapel beyond flanked by a chapter-house and choir vestry: at the west end are two smaller towers over the baptistery and porch respectively. What the Committee propose to do next is a puzzle—presumably they will commission an architect of their own choice; meanwhile, from next Saturday, the designs will be on exhibition in the Walker Art Gallery, Liverpool.

The Cape University Competition. THE sixty-two sets of designs submitted for the new university to be erected at Cape Town are on exhibition in the north gallery of the Imperial Institute till May 30th, from 11 to 5. The conditions required a university hall of about 6,000 sq. ft. area suitable for all public ceremonials, with independent accommodation for members of the university and for spectators, in conjunction with which were to be a council-chamber, vice-chancellor's rooms and administrative offices: the whole to form the front of a quadrangle around which future extensions might be ranged. The assessor has awarded the three premiums as follows:—First (£400), Mr. W. Hawke, of London; second (£200), Mr. J. Edwin Forbes, Birmingham; third (£100), Mr. Edmund W. Wimperis and Hubert S. East, London. The buildings were required to cost £30,000, or £50,000 in Cape money, as there is a difference of sixty per cent. between European and Colonial values. The first-premiated design is undoubtedly the best. The author has adopted the only logical treatment, that is, with a semi-circular university hall and the several offices grouped symmetrically around it on the ground floor. The hall is well shown on the elevation, but the author would have done better to give an apse effect to the roof than a dome which is badly cut away at the platform end. The two other premiated designs show an entirely different treatment, having oblong halls; they are nothing like so satisfactory; the design placed second has a dome flanked by four towers, the back two of which are supported on the pendentives. The remaining designs are, as a whole, inferior.

Vauxhall Bridge. THE design for a steel bridge at Vauxhall with elliptical arches which was approved by the London County Council last November, when an expenditure of £170,000 was sanctioned for its erection, has been superseded by the revised design which we are able to publish as a centre-plate this week; and we must say that the collaboration of Mr. Riley with Mr. Fitzmaurice augurs happily for the future. The treatment of the spans is, we think, very pleasing and the parapet cleverly contrived, but the panels over the piers and, especially, the pylons are not at all satisfactory. The scale of the figures in the panel (presumably intended to be cast-iron work) is so much larger than life-size as to be quite out of proportion: indeed, the whole panel gives one the impression of a framed picture fixed on the bridge. For these panels £8,000 will be needed. As regards the pylons, the retention of which we understand Mr. Riley considers so essential, we have no objection to them *per se*. To take the most recent and very familiar example of the Alexander III. bridge at Paris, pylons can be made to give great dignity to a bridge even though there is absolutely no constructional necessity for them. But those shown in the revised Vauxhall Bridge design are not well treated. The manner in which they are built up, like blocked pilasters, is not pleasing, while we cannot understand why the square projection should have been put above the pediment—it looks for all the world like the top of a chimney. But, apart from æsthetic considerations, the Bridges Committee do not favour these pylons because they are estimated to add £10,000 to the cost of the bridge, and, further, it is feared that they would be dwarfed by the large blocks of buildings which are likely to be erected in their vicinity. In any case we think the bases might be retained and some statuary erected on them. It is worthy of note that these pylons have been considerably reduced in size to allow them to be erected on the foundations already built, and are proposed to be erected on the Westminster side only, where provision is also made for a possible extension of the Embankment; but the difference in level between the latter and the bridge approach is insufficient to allow carriage traffic, and gradients are thus needed with broad flights of steps on either side.



Law Cases.

Chemical Treatment of Sewage.—The case of *Reeves Chemical Sanitation, Ltd.*, v. *Mayor, &c., of Henley-on-Thames* was heard in the Chancery Division of the High Court of Justice last week. The defendants had determined to try experimentally the system of Messrs. Reeves & Brown for dealing with the sewage of Henley. An agreement was entered into under which the plaintiffs took over the entire working, control and management of the sewage and works at the outfall works previously managed by the defendants themselves, but this did not include the control of the town sewers. In April, 1897, the plaintiff company was incorporated, and the rights of Messrs. Reeves & Brown under the agreement were transferred to the company, which continued to carry on the work. On January 10th, 1903, the plaintiffs received a letter from the town clerk of Henley informing them that at a special meeting of the Corporation a resolution had been unanimously carried "That this Council is of opinion that the Harris-Reeves Syndicate has not been successful in preventing smells from arising at the outfall works nor in preventing a nuisance from arising in connection with the carrying out of the sewage operations there, and the town clerk is accordingly instructed, in pursuance of the agreement, to give the Harris-Reeves Syndicate fourteen days' notice to remove, at their cost and without any compensation whatever, all their special apparatus and plant now at the outfall works." This resolution of the Council was, the plaintiffs alleged, wholly without justification, as at the date thereof no complaints had been made by any person as to smells. The plaintiffs further alleged that the resolution was not passed *bonâ fide*, but maliciously, with the object of getting rid of the agreement with the plaintiffs so as to enable the Council to introduce another and cheaper system for the treatment of the sewage. In these circumstances the plaintiffs submitted that the contract had not been validly determined, and that in any case they were entitled to reasonable notice before the defendants could enter upon and take possession of the works and land. They claimed declarations accordingly, and an injunction to restrain the defendants from interfering with them in their treatment and disposal of the sewage.—After considerable evidence had been given, plaintiffs' counsel intimated that he could not carry the case any further.—Mr. Justice Farwell said that the system of the plaintiff company seemed to be a good one, but their own witnesses had admitted that at times there were smells at the outfall works. The Council had passed a resolution under clause 3 of the agreement (this provided that if valid complaints of smells were made and a nuisance was created the sanitary authority could call upon the contractors, without notice, at their own cost and without compensation, to stop the operations and remove the apparatus within fourteen days), and there was no evidence of improper motive or of want of *bona fides* with regard to that resolution. If contractors chose to sign an agreement containing such a clause they must abide by the consequences. The result was that the action failed and was dismissed with costs.

Dwelling-house or Store?—At the Sunderland Police Court last week John Miller was charged with erecting buildings contrary to the by-laws. The town clerk said the defendant's premises were situate at 182, Roker Avenue, and he was charged with erecting a new building, intended for a dwelling-house, without providing an open space of at least one-third of the site. In explanation of the charge Mr. Bowey said that in the case of a building built before 1851 any addition to it did not constitute a new erection, but in 1885, by the Borough of Sunderland Act, any addition was a new building, save that such addition were made solely for business purposes. Mr. Miller's premises were built before 1851. In July, 1901, he presented a plan showing that at the back of his property he proposed to erect a building exclusively for business purposes, and leaving only 32ft. of space, in lieu of 272ft. had the premises been intended for dwellings. The plan was approved, and the work commenced. But on inspection the building surveyor of the Corporation found that fireplaces and ceiling cornices were being put in, which had not been shown on the plans, and this was brought to the notice of Mr. Miller, who repeatedly said that no one was going to live in the property. The rooms had been described as store-rooms. In September and October the chairman of the Building Committee and the building surveyor visited the place, and found several of the rooms furnished and people living in them.—For the defence Mr. R. C. Nelson said the premises had never been used as a dwelling-house, but always as a store. Mr. Miller and his family were there early and late, and it was necessary for them to have some provision for cooking food and changing their clothes. There was no sleeping accommodation.—The bench decided that the building had not been used for business purposes, and on that point the Corporation's case was supported. They did not, however, think that the evidence supported the charge contained in the summons of erecting a building contrary to by-laws, so much as of occupying a building already erected for another purpose to that for which it was erected. For this reason they dismissed the summons.—The Bench agreed to state a case, but declined to allow costs to either side.

The House near Lenham, Kent, illustrated on this page, is proposed to be built for Miss Young at a cost of about £2,500; the walls of red brick with the upper part in white rough-cast and the roofs covered with red tiles: half-timber and woodwork to verandah in oak, and the interior of the hall and staircase to be treated in walnut with a canvas frieze. Mr. Sydney E. Castle, of The Studio, Louvaine Road, S.W., is the architect.

NEW MIDLAND HOTEL, MANCHESTER.

THE building of a large hotel in the centre of a modern city taxes the energies of both architect and builder to the greatest extent, for not only are there problems of planning and design to be solved but in the construction itself innumerable difficulties and restrictions are imposed by commercial requirements and public convenience. So that a large new hotel offers many interesting and instructive features. In the new Midland Hotel which has been built outside the Central Station at Manchester there have necessarily been examples of this, but attention has especially been drawn to the building by reason of the rapidity with which it has been erected. A year ago there was little more than its framework visible, with short heights of wall here and there behind the scaffolding, and girders half fixed; while now the huge work is almost completely finished. The builders are Messrs. William Brown & Son, of Trafford Road, Salford. Mr. Charles Trubshaw, F.R.I.B.A., of the Midland Railway Company's department at Derby, is the architect. As far back as the middle of last December the roof was being put on the topmost storey and the scaffolding taken down: and then for the first time it was possible to see the mass of the building, and how leviathan it appeared in comparison with the surrounding structures. Much warehouse property which formerly stood on the site (about two acres) had to be demolished, as well as the Gentlemen's Concert Hall, the People's Concert Hall and the Lower Mosley Street Schools. After these had been cleared away, and the excavations made down to the rock, the foundations were begun in September, 1899, but it was not until March, 1900, that the actual work of building was commenced. For the first 26ft., rising from the pavement, the front elevations are built of red Aberdeen granite with Shap granite bands, and thence to the roof they are of terra-cotta blocks.

The basement is confined to the usual stores of an hotel and the necessary appliances for heating and ventilation, the scheme for the latter being elaborate. Baths are also provided. In the intermediate basement are hair-dressing saloons, bathrooms, kitchens, &c. The ground floor on the Peter Street side has an entrance about 19ft. wide leading into a carriage court, with an inward and an outward way for vehicles. From this part it may be noted that access is given to a fine octagonal-shaped lounge on the first floor, which has a balcony for a band. From the lounge one may pass on the extreme left to a large room to be used as a coffee-room, or on the right to a French restaurant. On the Mount Street side of this restaurant is a covered court or winter garden—a large rectangle—having a raised terrace or platform for promenading purposes. Beyond the French restaurant and the winter garden are private dining-rooms. From an entrance to the hotel in Mount Street access is given to a luncheon-room overlooking Peter Street, and to a restaurant—on a larger scale than the French restaurant—with windows overlooking Mount Street. Besides the entrance in the latter street, already mentioned, is another nearer the centre of this side of the block. There is also an entrance for purposes of business and telephone communication. In Windmill Street is an entrance which will be mostly used for conveying luggage into the hotel. Following the line of the building towards the Central Station, one reaches another of the principal entrances directly opposite the station. This leads into an entrance hall for the new Concert Hall, which, under the terms of acquisition by the company, takes the place of the old Gentlemen's Concert Hall: and here it is hoped that the long-famous Gentlemen's Concerts of Manchester will be resumed with the same success as in days gone by.

The new Concert Hall, which is entered from Windmill Street, is on the first floor and is reached by a marble staircase. On the left of the hall are lounge- and reception-rooms. The lounge, already described as octagonal in shape, is entered from Peter Street. From this entrance passages lead on the one side to a private ballroom and dressing-room and on the other to a billiard-room. Passing into a long corridor, the visitor finds on this floor a number of private dining-rooms, bedrooms, bathrooms and sitting rooms running round the various sides of the building.

On the second floor is a winter garden or covered court, with an octagonal roof. The ventilation and efficient lighting of this has been well provided for. There is on this floor a continuous corridor leading to bedrooms and bathrooms.

On the third floor is a continuous corridor which runs all round the building. Here the great space representing the open court is well seen. The fourth, fifth, and sixth floors are practically a repetition of those below, and the top storey is covered by a Mansard roof of steel and fireproof materials. The whole structure has about 480 rooms, of which 400 are bedrooms.

Of the methods adopted by Mr. J. C. Stewart and the builders in the erection of the hotel we have already made brief reference only, for on previous occasions—as when describing the new Westinghouse Works at Manchester—we have dealt in some detail with these methods; indeed, when the matter comes to be set down in print there is not a great deal to tell, because the speedy erection of buildings has resulted more from foresight, close direction of work and good wages rather than the introduction of great labour-saving devices. The contractors know what they want and carry out their work in a definite systematic way—that is the pith of the matter.

Having now described the general features of the hotel, we may refer to some of the firms who have carried out their respective portions of the work.

The total amount of terra-cotta delivered by the Burmantofts Works, Ltd., of Leeds, has been 55,000 cub. ft., the whole of which was made to the architect's details and instructions. It has been formed in the "Burmantofts Vitreous" glazed terra-cotta, and the process of glazing the terra cotta inside has also been adopted, this process having been patented by Burmantofts a short while ago, with the idea of effectually preventing discoloration on the exposed face of the terra-cotta due to any exudation from the materials used in filling and walling. The whole of the modelling for the ornamental and enriched work has been done by the staff of modellers employed at the Burmantofts Works. When Mr. J. C. Stewart was called in to supervise the erection of the latter portion of the building, with a view to expediting its completion, he at once approached the Burmantofts Works with a view to arranging for a prompt supply of terra-cotta in order to enable him to carry out his undertaking. His wishes were met in all respects and delivery made within the time suggested, thus enabling him to complete his contract within the stipulated time. Messrs. Burmantofts are also supplying and fixing faïence decoration to the carriage-court from Peter Street; also flower boxes in faïence around stanchions in garden court, and faïence decoration in the corridor leading from the station to the winter garden.

Messrs. Pearce & Norquoy, of Ancoats, New Islington, Manchester, have supplied the well-known folding partitions of which they are the patentees and makers.

Very careful consideration was given to the internal walls of the building, and many systems were examined and tested. The order was ultimately given to the Fireproof Plate Wall Co., Ltd., of Manchester and London, who carried out the work in a very expeditious and satisfactory manner. The whole of the corridor walls and the walls dividing the rooms (except those required for constructional purposes), totalling about 30,000 yds. super., have been erected by this firm. The walls have been thoroughly tested for their fire-resisting and soundproof qualities, and being strengthened by the insertion of internal rods are exceedingly strong, allowing the construction of walls of practically any size. The corridor walls on the first floor are 15ft. high, and the wall dividing the stage in the Concert Hall is 72ft. long by 26ft. 6ft. high. A further use was found for these plates in the casing of the stanchions in the Concert Hall, 38ft. high, and other stanchions and constructional ironwork in various parts of the building; also in the formation of air-shafts and flues in connection with the system of ventilation. As an instance of the speed with which the work can be done we may state that more than 8,000 yds. super. of walls were erected in one month, and the whole of the order completed within the stipulated time.

A great deal of the glasswork has been carried out by Messrs. George Wragge, Ltd., of Manchester, including the whole of the stained and beaded glass for the Concert Hall and the leaded glass for the rooms forming the Royal suite. This firm also supplied the whole of the interior balcony rails (upwards of 320), the more important rails on the exterior (numbering 125), the balustrades to the main stairs and other parts, the railing around the hotel (including the electric-light standards), and the bulk of the metal casements (upwards of 800 in number).

Messrs. Stuart's Granolithic Stone Co., Ltd., of Millwall Dock, London, have executed the paving in some of the corridors, amounting to many thousands of yards, and, we understand, are also to carry out the courtyard.

Messrs. George Trollope & Sons, of London, executed their work from designs and sketches furnished by Mr. Trubshaw, the architect of the hotel. The Concert Hall, which is the largest room in the building, measuring 120ft. by 55ft. 6in. by 33ft. 6in. high, has been treated in the "Regence" style, the material employed being canvas plaster, with dados in the galleries and on the stage of wood painted white; the front of the stage and the dado, 5ft. 6in. high, which runs round the body of the hall, are in polished mahogany. The main ceiling is a large and simple vault divided into panels by enriched mouldings. The side galleries have vaulted ceilings springing from piers of square plan, the faces of which have panels and trophies of musical instruments. The walls also are panelled and similarly enriched. The general colour of the room is ivory and gold. The hangings are in a quiet green colour, intended to form a subdued background for the bright toilettes of the audience. The whole of the details have been carefully studied from good examples of the style by Messrs. Trollope & Sons' artistic staff. The supper-room, 96ft. long by 46ft. wide by 15ft. high, situated below the Concert Hall, is treated in the same style both as to colour and material. The reception-room to the Concert Hall is 40ft. by 24ft. by 15ft. 6in. high, and has an elegant ceiling-light of oval pattern. The reception-room to the supper-room is 40ft. by 24ft. by 12ft. 6in. high. Both these latter rooms are treated in the same style as the rooms to which they are attached. Messrs. Trollope have also executed the ceiling of the grand staircase, 26ft. by 21ft., the ceilings of the lounge, 55ft. by 13ft. and 21ft. by 13ft.,

both in canvas plaster, Italian in style, to harmonize with the marble work of the walls; also the ceiling of the corridor, 62ft. by 10ft. 6in., Italian in treatment, and consisting of five bays with domes in steel and curved and painted glass. The arches and vaults, together with the panelled archways at the end of corridor, are in canvas plaster. All the electric fittings in these rooms, excepting only the cornice lighting, have been supplied by Messrs. Trollope.

The warming and ventilation of the Concert Hall and supper-room have been carried out by the Sutcliffe Ventilating and Drying Co., of Cathedral Corner, Fennel Street, Manchester, on their well-known plenum system. Fresh air is drawn from the outside through a coke-filter screen by two 60in. Sutcliffe fans, which move together about 80,000 cub. ft. of air per minute. The filter screen effectually removes all smuts and impurities from the incoming air, and as the supper-room and Concert Hall are always under a slight plenum or air-pressure a pure supply is ensured and no air can enter through the doors or windows, thus keeping out all dust or fog. The air is warmed when required by two Sutcliffe multi-tubular steel air-warmers supplied with steam direct from the main boilers, and by means of a system of dampers either all hot or all cold air may be forced into any room, or any mixture of both as desired. The distribution of the air is by galvanized metal ducts built into the walls and connecting to registers admitting the air on all sides of each room. These registers have louvre control to shut off the air-supply to any point when necessary. The foul air is exhausted by two 36in. Sutcliffe electric fans fixed over the Concert Hall, and connected to outlet louvre registers placed near the floor and ceiling of both the Concert Hall and the supper-room. The whole plant has been working for the last three months and the heat thus being on has materially helped the decorators in drying the paintwork.

The Standard Sanitary Manufacturing Co. of Pittsburg (whose London offices and showrooms are at 22, Holborn Viaduct) are supplying all the bath tubs, sitz baths and lavatory tubs for the hotel. These baths and fittings were selected after very severe tests. Though installed in all the leading hotels in America, this is the first hotel in this country to be fitted throughout with them. The porcelain-enamelled baths supplied by the Standard Sanitary Manufacturing Co. are guaranteed to stand all extremes of heat and cold, however great, without crazing or cracking, even after the lapse of years, and they will bear the roughest usage without deterioration. This is of incalculable value in hotels and large institutions, for which all sorts of mechanical devices have been patented to prevent hot water entering a bath first, and to eliminate all chance of damage to the glazed surface. The baths of the Standard Sanitary Manufacturing Co. are finished outside to match the colour scheme of the bathroom, and are fitted with full-way valves and a special form of waste.

The grand entrance-hall from the Central Station approach, and the spacious staircase and lounge corridor leading to the Concert Hall, have all the walls faced with rich marbles, highly polished. The dado is of vert campan with moulded capping of the renowned verd antico marble and a base of vert des Alpes. The walls above this dado, and all the arches and columns, are of the old Greek Skyros marble, relieved with bands of vert campan, which forms a pleasing combination of colour, the markings in the Skyros panels being very curious and interesting. The handrail and balustrade of this staircase are executed in similar marbles, and the steps are of white Sicilian marble. The corridors and bathrooms on all the principal floors are lined 5ft. high with a dado of polished white Sicilian marble, with a neatly-moulded capping and base (altogether measuring considerably over a mile in length). The effect is cool and cleanly. This portion of the work has been successfully carried out by Messrs. J. & H. Patteson, of Oxford Street, Manchester.

The Crystalline Co., Ltd., of Stourbridge, are tiling the ceilings in many of the rooms with their patent Crystalline tiles set in special cement, having already done extensive work for the Midland Railway Company at the Queen's Hotel, Leeds. The tiles are manufactured from porcelain opal. They have a good "key," are true in shape, and do not crack; but to use them to best advantage they must be set in Crystalline cement, which expands and contracts at the same rate as the tiles themselves. The firm also has a system of decorating their Crystalline tiles by super-imposing layers of coloured glasses on them.

The metal casements fixed in the hotel by the Crittall Manufacturing Co., Ltd., of Braintree, are of their best section steel, with gunmetal fittings and gunmetal condensation gutters, all opening inwards. There are some hundreds of them.

Messrs. George Wright & Co., of Burton Weir, Rotherham, have supplied a large number of mahogany and oak mantelpieces, with tile panels and hearths.

Mr. John Faulkner, electrician, of Strangeways, Manchester, is fixing a system of conductors for the protection of the building from lightning. There are main conductors attached to the boiler chimney and the five flag poles on towers. These lightning conductors are fixed down the outside of the building and terminate in the ground about 20ft. below the street level. All the iron railings on the roof are connected by branch conductors with the main conductors on the towers.

The steelwork contractors were Messrs. E. Wood & Co., Ocean Iron Works, Manchester; Messrs. Dorman, Long & Co., Middlesbrough; and Messrs. The Patent Shaft and Axletree Co., Wednesbury.

Messrs. Davies Brothers, Manchester, have done the asphalting.

The cabinet work has been carried out by Mr. W. Höfler, London; Messrs. Marsh, Jones & Cribb, Leeds; Messrs. Trollope & Sons, London; Messrs. Waring & Sons, London; and Messrs. Waring & Gillow, London and Manchester.

Messrs. Cordingley & Sons, Bradford, have done some of the concrete paving.

The fireproof flooring has been fixed by Messrs. Fawcett & Co., London (floors, ceilings and roofs on "Mark Fawcett" system having been fixed at the rate of 1,000yds. per week), and Mr. B. Morton, Manchester.

Some of the fireproof partitions, &c., and encasements to beams have been executed by Messrs. Banks' Fireproof Construction Syndicate, London, and the New Expanded Metal Co., London.

Collapsible gates were supplied by the Bostwick Gate and Shutter Co., Manchester.

Patent glazing to roofs was carried out by Messrs. Mellowes & Co., Sheffield.

Grates, mantelpieces, &c., were supplied by Messrs. Derwent Foundry Co., Derby; Messrs. Fletcher, Russell & Co., Manchester; Messrs. Micklethwaite & Co., Rotherham; Messrs. Newton, Chambers & Co., Manchester; Messrs. Steel & Garland, London and Worksop; Messrs. Waring & Gillow, Manchester and London; and Messrs. Yates, Haywood & Co., Rotherham.

Messrs. Ashwell & Nesbit, London, have done some of the heating and ventilation.

The hairdresser's saloon has been fitted up by Messrs. Parton, Sons & Co., Birmingham; the india-rubber paving laid by Messrs. Macintosh & Co., Manchester; and some of the lead-glazing executed by Mr. R. Bennett.

Locks and hardware were supplied by Messrs. Markt & Co., London, and Messrs. C. Smith, Sons & Co., London.

Marblework by Messrs. A. Lee & Brothers, Bristol; Messrs. Fenning & Co., London; and Messrs. Doulton & Co., London and Manchester.

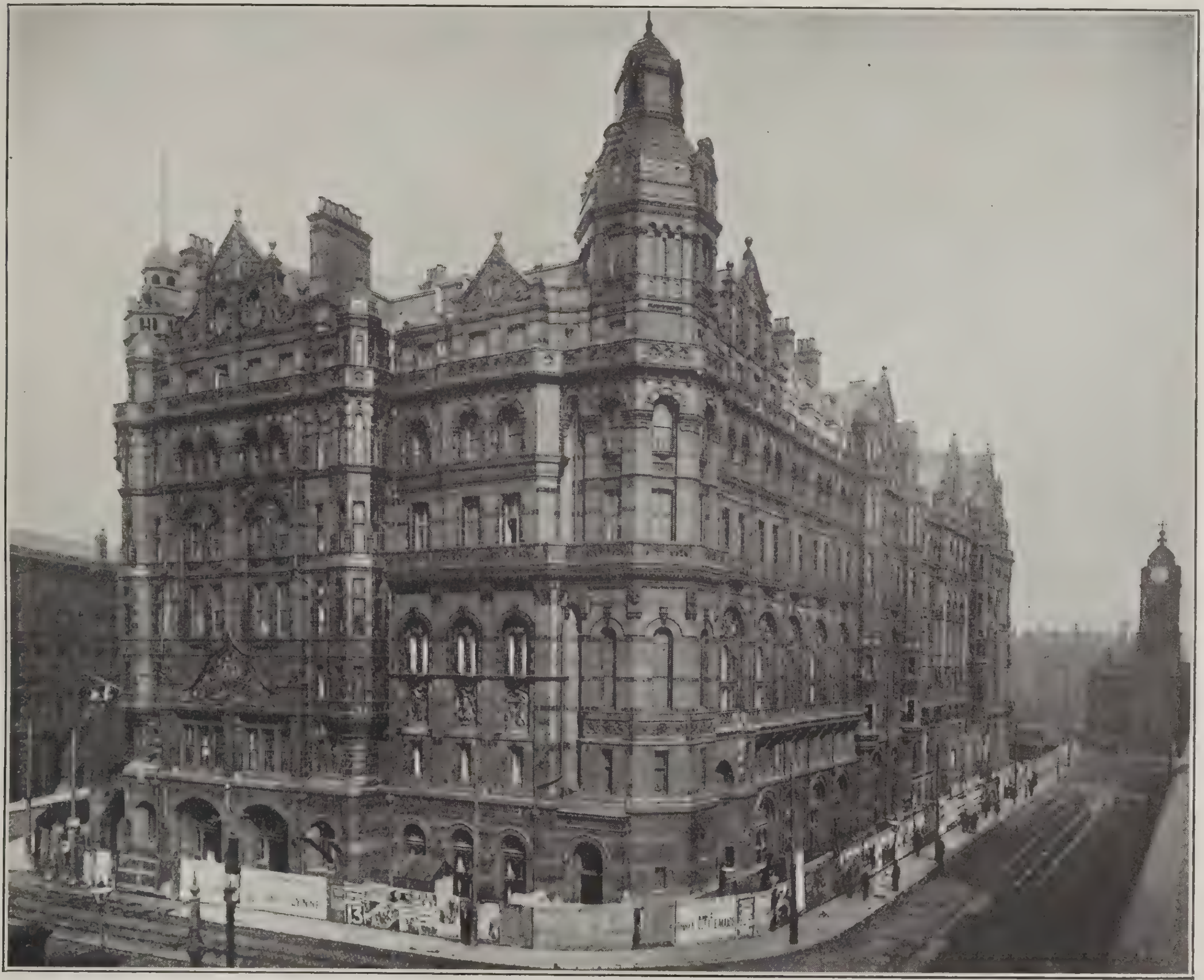
Marble terrazzo and mosaic paving by Messrs. Geary, Walker & Co., London; Messrs. Diespeker & Co., London; and Messrs. Waring & Gillow, Manchester and London.

The plasterwork has been executed by Mr. C. E. Harwood, Manchester; Mr. J. W. Hindshaw, Manchester; Messrs. Trollope & Sons, London; Messrs. Waring & Gillow, Manchester and London; Messrs. Marsh, Jones & Cribb, Leeds; and Messrs. Waring & Sons, London; and the painting by Mr. C. E. Harwood.

Revolving doors were supplied by Messrs. the Van Kannel Revolving Door Co., London; and sanitary fittings, &c., by Messrs. Doulton & Co., Manchester and London; Messrs. Holroyd & Co., London; and Messrs. Morrison, Ingram & Co., Manchester.

Messrs. Williams & Co., Manchester, and Mr. John Norton have done some of the tiling; Messrs. Braby & Co., Liverpool and London, the zinc work; and Messrs. the Princess Art Metal Co., Manchester, some of the railings and gates.

The representative of the Midland Railway Company says: "The hotel will combine all the novel features of American and Continental hotels with the solid comforts of an English home, and will, it is confidently expected, influence the future of all English hotels both from a structural and managerial point of view. The numerous restaurants, lounges, &c., will undoubtedly change the social life hitherto pursued in provincial towns so that the opening of this hotel may be said to form an epoch in the catering calendar."



THE NEW MIDLAND HOTEL AT MANCHESTER. CHARLES TRUBSHAW, F.R.I.B.A., ARCHITECT.

Two large Stained-Glass Windows have been fixed on the grand staircase of the new Grand Hotel, Harrogate. They were designed and executed in the studios of Messrs. Kayll & Co., of Albion Street, Leeds, and portray subjects representative of the ancient names of Harrogate and the surrounding towns.

THE SOCIETY OF ARCHITECTS.

ANNUAL DINNER.

THE nineteenth annual dinner of the Society of Architects was held at the Princes' Restaurant, Piccadilly, W., on Friday evening, the chair being occupied by the president, Mr. Silvanus Trevail, J.P., F.R.I.B.A., who was supported by a large and representative gathering, including Canon Vere, Lord St. Levan, Viscount Clifden, Sir Arthur D. Hayter, Sir Edwin Durning-Lawrence and several other members of Parliament, General Festing, Sir William Treloar, Sir H. Trueman Wood, Judge Rentoul, the Lord Mayor of Liverpool, the mayors of several London boroughs, the masters of the Painters' and Carpenters' companies, the presidents of the London Master-Builders' Association, Surveyors' Institution and Institute of Builders, and of the Liverpool, Cardiff and Aberdeen architectural societies, the clerk to the London County Council, and others.

The loyal toasts having been proposed by the president, Mr. Andrade Harben, Mayor of Paddington, proposed the "Houses of Parliament," which was responded to by Lord St. Levan and Sir Walter Foster. Alderman Sir William Treloar proposed the toast of "The Imperial Forces of the Empire," which was responded to by General Festing. Sir Arthur D. Hayter, Bart., M.P., in proposing the toast of "The Society of Architects and Architecture," referred to the debt of gratitude the public at large owed to the architects for their endeavours to beautify the towns. He hoped that the Bill for the registration of architects which the Society had promoted in Parliament would be passed. If that Bill became law it would reduce the large number of insanitary and jerry-built buildings erected, and local authorities would employ properly qualified men. The president, in reply, said:—

At no period in our history as a people, a nation or an empire has the work of the architect been more important than it is to-day. Never before were there so many and so varied a collection of architectural problems to be solved, nor of such an exacting character. This applies no less to buildings of the commercial class than to those of the domestic, the ecclesiastic or the municipal, with all its sub-divisions of hospitals, asylums, educational or other classifications that might be multiplied indefinitely. The scope of an architect's duties is a very wide one. It requires in the properly-qualified practitioner a man of good education, a travelled man, a man of keen observation, a man skilled in the science as well as in the art of his profession, with a knowledge of the latest appliances and the latest developments of all those specialities which go to make a successful building, and at the same time a keen discrimination so as to weed out and to avoid in his client's interest the bad. In short it requires a highly-trained man with many years' experience before he can undertake the responsibilities of a principal. This means time and it means money. And what we say is that when a man possesses all this to the satisfaction of an examining body appointed by the State he should be registered by the State as a qualified practitioner, just as much as the physician, the surgeon, the barrister, the surgeon-dentist or the chemist. We do not say that a man not possessing the requisite qualifications and not registered may not design and superintend the erection of buildings, but what we do say is that the State shall in its own interest tell the general body politic who is so qualified; and then if they employ an unqualified man it will be their own fault just as much as if they went to a quack doctor and got killed as the consequence. Now, with all the developments of sanitary science, for example, is it to be expected that the nearest auctioneer or estate agent or his clerk around the corner, who has to do all the cataloguing and ticketing of an auction sale one day, can design a mansion or a villa the next and see to it that the drainage, its ventilation, traps and connections are all right. The thing is absurd, and what we say is that the man doing such work should, in the interest of the general public, be trained and skilled, and afterwards duly registered by the State. This would protect the public, who are not always as discriminating upon such matters as they ought to be. To this end the more active spirits among us have promoted an Architects' Registration Bill, which is now before Parliament, that will, I hope, commend itself to all the gentlemen I see around me, and eventually become the law of this land as much as it is already the law of almost every important State on the continents of Europe and America and in our Colonies. As we have so many municipal chieftains here, I may perhaps be allowed to take this opportunity of congratulating them upon the great street and other improvements that are taking place all over the country.

We as architects say—continue in this course, but now and then call to your aid the skilled trained mind to advise you as to how the improvement may be best made and the space properly and artistically utilized afterwards. Often the very best opportunities are thrown away for want of this, and spaces and sites that might have been things of beauty and joys for ever given up to the advertizing fiend, who does not as a rule care how many abominations he creates so that his pockets may be filled by the illicit puffing of some worthless nostrum. These huge letters on buildings destroy all sense of dignity, taste and proportion. These plasterings of public conveyances, so that the last thing one can discover is the point of either destination, are an abomination and a scandal that England should be ashamed of, and which do not exist in the same degree in other civilized States. Soon to design a commercial building in a leading thoroughfare the chief problem will be, not a dignified sense of proportion, style and architectural balance, with columns, entablature, cornices, mouldings, &c., properly adjusted and proportioned, but how much flat wall surface can be provided for these advertizing monstrosities. Another reason has been mentioned for the bad architecture in England as compared with that of other countries in buildings of the ordinary class. Here we are tied down by the short lease system of 99 years or even less. There no one dreams of building excepting upon the actual freehold or, like they have in Scotland, the perpetual feu. This, of course, means good design and good building, because the person who builds is secured in his holding. But, under the short leasehold system, the leaseholder of course builds so far as he possibly can only to last his lease out, and the effect is apparent all around us, and especially to those who compare buildings here with what they have seen abroad.

Mr. J. Woolfall, President of the Liverpool Architectural Society, also responded. Mr. H. E. Duke, M.P., proposed "The London and other Local Authorities," which was responded to by Alderman Sir H. E. Knight, past Lord Mayor of London; Mr. R. A. Robinson, Deputy Chairman of the London County Council (who referred to the need for a county hall for London, and the difficulty of finding a suitable site), and Alderman W. J. McLellan, Mayor of Rochester. Mr. G. Gard Pye, Vice-President of the Society of Architects, proposed "Our Guests," and Mr. W. Watson Rutherford, Lord Mayor of Liverpool, in response referred to the beauty of the Wilhelmstrasse at Wiesbaden, which he attributed to the by-laws insistin that no two buildings on it should designed alike nor on the same line of fron age, the contrary of our regulations. Mr. V C. Pendarves, Vice-Chairman of the Corn wall County Council, also responded. Th Hon. W. Massey-Mainwaring, M.P., propose the "Arts and Crafts allied to Architecture which was responded to by Mr. William King, President of the Institute of Builders.

Bricks and Mortar.

Aphorism for the Week.

Extravagance and absurdity have still the law, and should pay as rigid obedience to as the primmest thing on earth.—NATHANIE HAWTHORNE.

Our Plates. A reference to the ne Vauxhall Bridge will found on p. 201 of this issue.—The house an lodge at Pyrford Common, near Wokin Surrey, are being built for Mr. F. Walters fro designs by Mr. C. F. A. Voysey, of 23, Yo Place, Baker Street, W. Mr. F. Müntzer, 16, Dover Street, Piccadilly, and Farncomb Godalming, Surrey, is the builder. Th material is, for economy, brick cement rough cast, with tile roof, Monk's Park stone windo dressings, and iron casements. The sun an view are both on the same side of the house

Checking the Advertiser. No. 9 of "A Beautif World," the journal of th National Society for Check ing the Abuses of Public Advertising, is abou to be issued to members. It covers the tran actions of several years, and is therefore unusual bulk, there being 134 pages. Matte of special interest are the Prussian Act f prohibiting the disfigurement of landscap (the report of the Landtag appears now English for the first time); the conferenc held in March with the leading bill-postin firms with a view to ascertaining and, possible, to meet their objections to th establishment of municipal control; and th steps taken towards forming local associa tions for developing an interest in th "æsthetic amenities of their respective neig bourhoods." The Society allows itse to hope that the "John Evelyn Club already formed for Wimbledon is only th first of a network of such defensive an educational agencies. An attempt has bee made to distinguish in the table of conten the subjects of fresh importance from tho which must be said to form permanent featur in the Society's "dossier," and the retrospe is intended to be an abstract of its wo from the beginning (1893) up to the presen The Society may count among the results its protests the abolition of sky-signs London, the prohibition of transpare advertisements in tram cars on lines co trolled by the L.C.C., the prohibition of flas lights and illuminated advertisements of kind dangerous to traffic, the cessation flash advertisements on the Nelson Colum the removal of the monster lettering from th Shot Tower near Waterloo Bridge, and th prohibition of advertising on railway bridge while successful protests were lodged Edinburgh in 1899, Glasgow in 1900, Dove in 1901, and elsewhere. The presiden of the Society is Dr. Longstaff, the hon auditor Mr. Basil W. Hardcastle, and th secretary Mr. Richardson Evans (1, Cam View, The Common, Wimbledon).

The A.A. Members' Supper was held at the Hotel Great Central on Friday last, with Mr. Henry T. Hare, the president, in the chair. The attendance was the largest on record. An excellent entertainment was provided by Mr. Harrison Hill, Dr. Byrd Page Mr. Haydn Wood and Mr. Seth Hughes.

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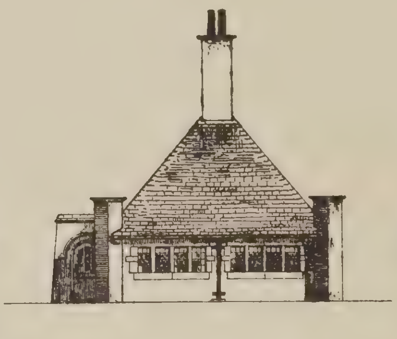
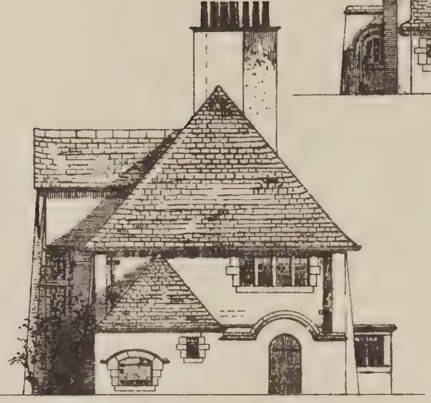
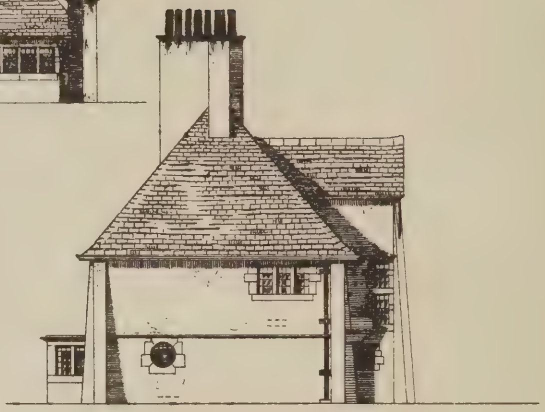
Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, May 20th, 1903.





WEST·ELEVATION·



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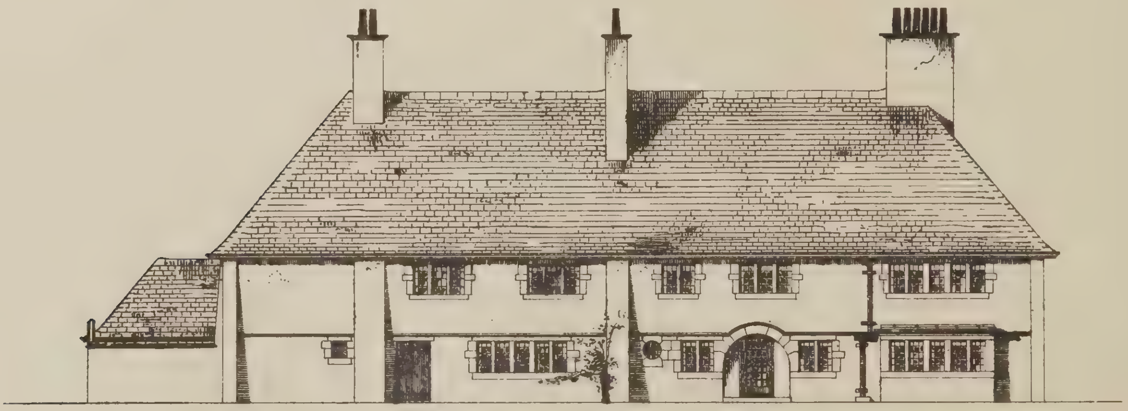
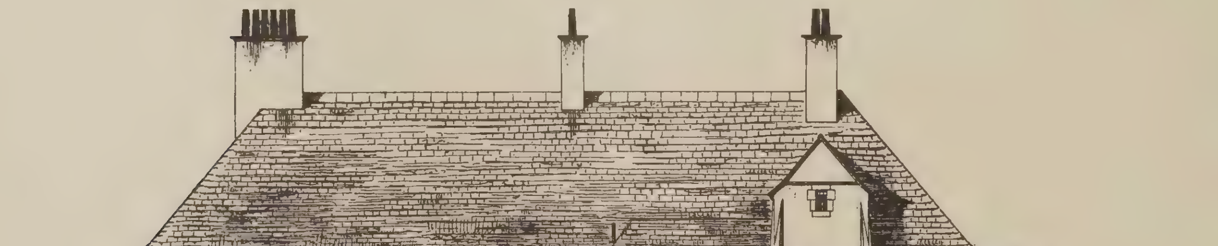
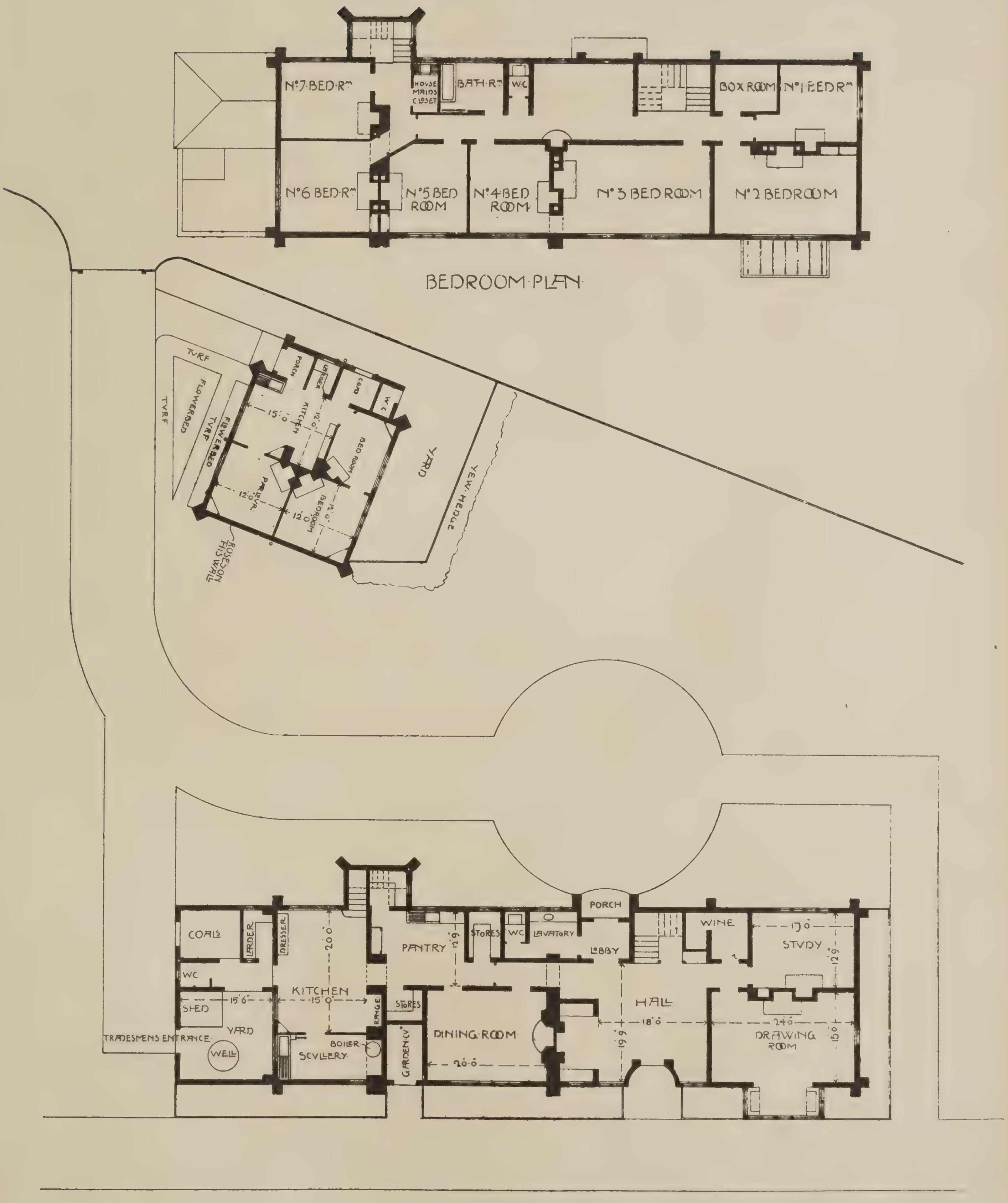


SOUTH ELEVATION·



NORTH·ELEVATION·

"VODIN," PYRFORD COMMON, SUR



BEDROOM·PLAN·

GROUND·PLAN·

"PHOTO-LITHO." R. J. EVERETT & SONS, 56 LUDGATE HILL, E.C

C. F. A. VOYSEY, ARCHITECT

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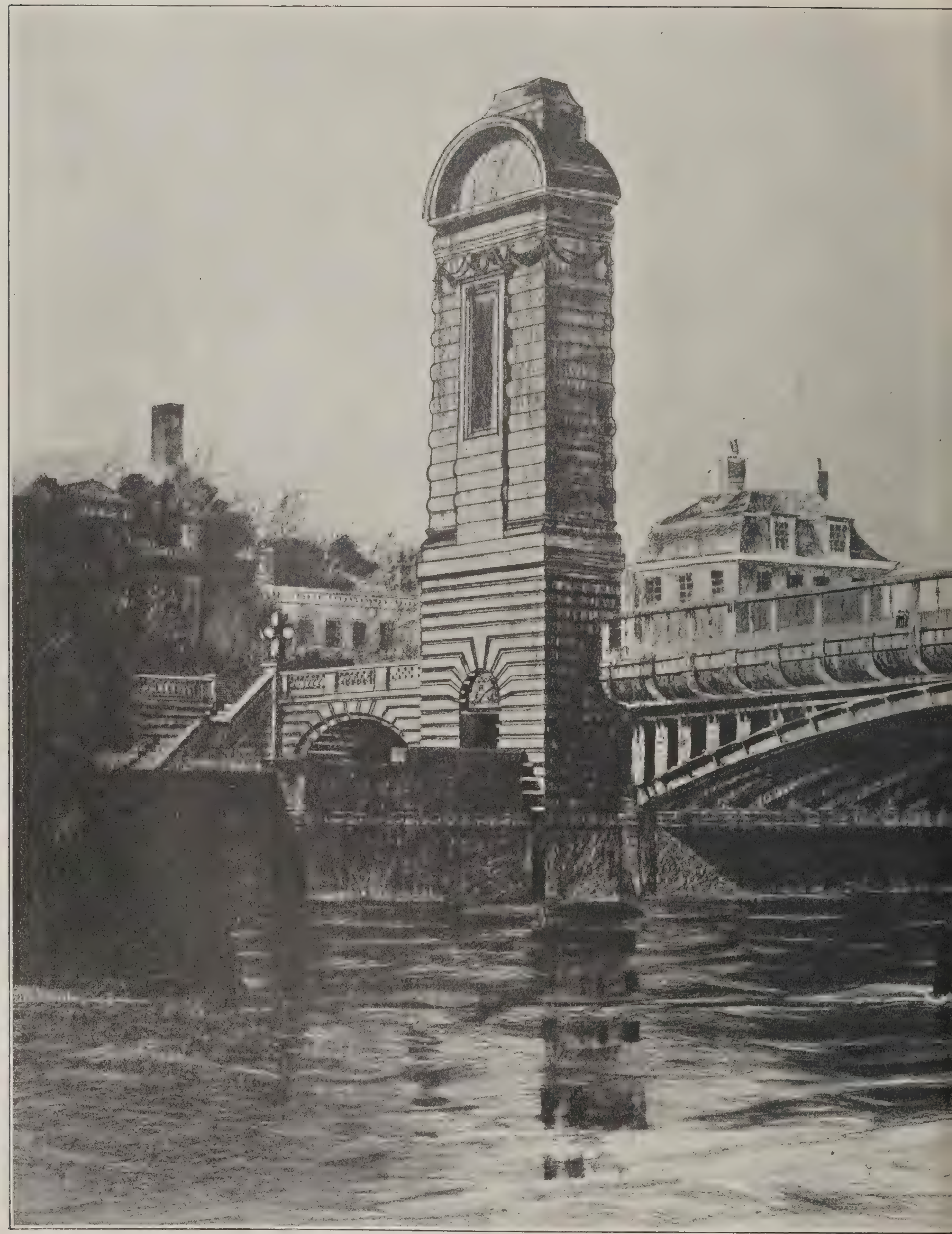

REVISED DESIGN FOR THE NEW VAUXHALL BRIDGE, BY MAURICE FITZMAURICE AND W. E

EY (RESPECTIVELY ENGINEER AND ARCHITECT TO THE LONDON COUNTY COUNCIL).

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Enquiries Answered.

*ıe services of a large staff of experts are at
the disposal of readers who require informa-
tion on architectural, constructional or legal
matters. Questions should in all cases be
addressed to the Editor. The querist's name
and address must always be given, not neces-
sarily for publication.*

Removing Cement on Tiles.

Turriff.—Aberdeen writes: "Is there
y chemical or solution which would help
clean or soften cement on enamelled
es?"

The cement can be removed by the appli-
:ion of hydrochloric acid (spirits of salts).

R.I.B.A. Preliminary Examination.

Cardiff.—Pupil writes: "Having served
ee years as a pupil in an architect's office,
ım thinking of entering for the R.I.B.A.
:liminary examination. Would it be
visable for me to do so? If so, what
ɔks do you recommend for study?"

Yes. A list of suitable books and all in-
mation is to be found in the R.I.B.A.
lendar (price 2s. 6d.).

Old Bricks for Rough-cast House.

South Norwood.—C. T. M. writes: "I am
ɔut to have a house built at a cost of
ɔo, and my builder suggests, as it is to be
.gh-cast, that I should use old bricks
ich he has secured from Christ's Hospital.
ese certainly are like iron, whereas the
zzles obtainable in the neighbourhood are,
nparatively speaking, soft and crumbly.
ıich would you recommend? The builder
s he does not care which is done."

The reason of the builder's indifference is
be traced to the difficulty of laying old
cks, which can never be quite cleaned,
king up for the extra cost of new bricks.
t we advise you to have the old bricks
d, as they are harder.

Books on Engineering and Masonry.

Carlisle.—Theodolite writes: "Kindly
e me your opinion on the following
ɔks:—(*a*) 'Civil Engineer's Pocket Book,'
John C. Trautwine; (*b*) 'Masonry Con-
ıction,' by Ira O. Baker; (*c*) Stephenson's
timating.' What is a suitable book
.ling with masonry as applied to engineer-
, also a book on estimating the cost of
;ineering works?"

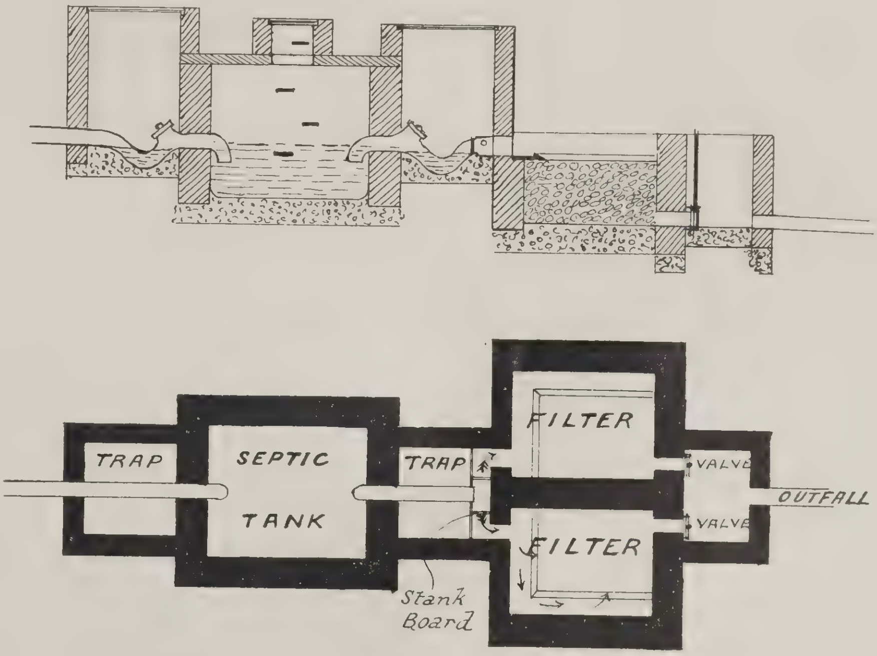
a) Trautwine's Pocket Book is one of the
st useful books an engineer can possess;
Baker's "Masonry" is the most complete
ɔk on the subject—this deals with
ineering masonry; (*c*) Stephenson's Esti-
ting is the standard work on the subject.
ınswer to the last question, "Engineering
imates, Costs and Accounts" (Crosby
ckwood, 12s.).

A Scheme of House-Drainage.

Cardiff.—Excelsior writes: "The ac-
ıpanying sketches (not reproduced) show
cheme of drainage for a house designed to
an improvement on the old cesspit system.
e sewage is brought from the house (not
ter drains) in pipes, properly ventilated,
the inspection chamber. From this the
age runs into a tank, and from the tank
ows to the filtering bed as shown. The
ı is to have the large tank kept air-
ıt to act as a septic tank, and to do this
inlet and outlet are turned down. The
ıent passes from the tank through land-
in pipes, surrounded by rough rubble, an
ıngement designed as a filter bed. (1)
uld the turning down of the inlet and
let pipe into the sewage tank lock the
in the turn-down pipes when the sewage
came up about their invert levels, and thus stop flow? (2) Is an air inlet necessary to effect the proper working of the tank?"

The scheme detailed will not work; to be frank, it is no better than the ordinary cesspit, which "Excelsior" wishes to avoid. If the septic tank is to be adopted several modifications and additions are required. The action of a septic tank is not to *purify* sewage but to *putrify* it as a preliminary to purification. By means of the anaërobic bacteria the solids in the sewage are broken up, and liquified. But the effluent is foul, and requires further purification by aërobic bacteria, which can only exist where there is a plentiful supply of air; and "Excelsior" will see that his scheme of filtration under ground will fail. As his scheme stands, the foul effluent would only poison the surrounding ground, just as does the leakage from an average cesspit. As there are one or two other points that require alteration, a sketch plan and section of a small septic tank system is illustrated here. Both the inlet and outlet pipes to the septic tank must be on the same level, and trapped. If "Excelsior" uses traps with cleaning arms, the stoppers must be secured, as gas is generated in the tank during the decomposing process. "Excelsior" should arrange for an escape pipe, fitted with an ordinary stop-cock, so that the gas can be burnt periodically. It has a non-luminous flame, which can be made luminous by the addition of an incandescent burner and mantle. (The sewage outfall works at Exeter are lit in this manner.) It is not absolutely necessary that a septic tank should be covered, as in the course of a few days a thick impervious scum will form on the top of the sewage, and under this the bacteria can thrive and work. At the same time, if the tank is anywhere near houses it is desirable to have it covered for obvious reasons. The sewage in the tank and the scum on its surface must be disturbed as little as possible. It is desirable to arrange for the sewage to enter the tank below the invert level of the pipes; this can be effected by turning down the ends of the inlet pipe, as shown by "Excelsior" in his sketch. Various methods for the egress of the liquified sewage are in vogue; but a similar pipe with the end turned down will suffice in a small scheme. The tank effluent passes through the second trap to the filter beds. There must be at least two of these, so that one is resting while the other is filling. The effluent when discharged from the second trap flows into a concrete channel in which are placed two stank boards so that the flow can be shut off either filter bed. The effluent passes with a ½in. drop from this concrete channel through an aperture in the filter bed wall into a wooden trough running round two sides of the filter bed. This trough must not be more than ½in. deep. and should be fixed perfectly level all round. (It is desirable also that the trough be removable, so that it can be lifted out when the filter bed requires cleaning. This can easily be effected by allowing it to rest on wooden brackets fixed to the wall, or on projecting bricks built in.) The outer edge of this flat trough should have a sloping lip. The object of this trough arrangement is to keep the effluent from running down the wall of the filter bed, and to ensure that the stream flows on to the bed in a very thin film, so that it can obtain a maximum exposure to the air. The filters are filled with furnace clinker broken to pass a ½in. ring free from dust. The clinker should be filled in level with the bottom edge of the trough lip. The filter-bed floors may with advantage slope to the discharge valves. These may be of Penstock or other approved type. The outfall may be connected with any land drainage system, or run over the land, or caught in a tank and used for garden watering. Being rich in nitrates, it is excellent for the latter purpose. The chambers can be constructed in concrete entirely or stock brick. In both cases the interior faces require cement rendering. If the interior is faced with blue brick in cement-mortar, the rendering will not be required. As to size, "Excelsior" is advised not to make his chambers too large. If the scheme is to deal with the sewage of one house only, it is advisable that each filter-bed should not take longer than a day to fill. The septic tank shown is about 6ft. by 4ft.; the filter-beds slightly smaller. The intercepting chambers should, if fairly deep, be large enough for a man to get down; the septic tank should be high enough for a man to stand and work in, as there is a residuum in the tank that requires removal from time to time. The septic tank should have an air-tight cover; but the intercepting chambers only require light open grids, hinged to frames built in, to allow of easy access. Step-irons should be provided if necessary.

J. H. E.-D.



SMALL SEPTIC TANK SYSTEM FOR A PRIVATE HOUSE.

Hiring a Steam Navvy.

CARLISLE.—W. B. writes: "Where can I hire a steam navvy to lift about 60,000yds. cube of loose earth embankment? How many yds. would it lift per hour, and what would it cost per month with driver?"

I think you may have a difficulty in getting a steam navvy on hire. I would recommend you to advertise for one.

M. POWIS BALE.

Civil Service Examination for Clerk of Works.

WOBURN.—CIVIL writes: "Where can I obtain information respecting Civil Service examinations for clerks of works?"

A set of former examination papers may be obtained from Messrs. Eyre & Spottiswoode, East Harding Street, Fleet Street, London, for the position of clerk of works in H M. Office of Works, dated March, 1895, price 1s. A study of this will show what the subjects are, and what amount of preparation will be necessary. Vacancies for these appointments do not often occur, but preparation for them would be useful for other examinations.

HENRY ADAMS.

Pressure of Wind from its Velocity.

PLYMOUTH.—VENTUS writes: "I measured the portion of a stone obelisk overthrown in Mauritius during the cyclone of 1892. Taking weight of stone 170lbs. per cub. ft., the overturning pressure per sq. ft. would be 141lbs. Would the velocity of wind work out to 168 miles per hour? Presumably the mean pressure has nothing to do with this case. During this cyclone the anemometer at the observatory was blown away and no record was available."

Hawksley's formula for the pressure of the wind from its velocity was $p = \frac{0{\cdot}0765\,v^2}{32}$ where v = velocity in ft. per sec. and p = pressure in lbs. per sq ft. (Min. Proc. Inst., C.E, LXIX., p. 201). Transposing this, $v = \sqrt{\frac{32p}{0{\cdot}0765}}$, then with a pressure of 141lbs. per sq. ft. $v = \sqrt{\frac{32 \times 141}{0{\cdot}0765}} = \sqrt{5898} = 242{\cdot}8$ft. per sec., and $242{\cdot}8 \times \frac{60 \times 60}{5280} = 165{\cdot}54$ miles per hour. Approximately $p = \left(\frac{v}{20}\right)^2$, or $v = 20\sqrt{p}$, whence $v = 20\sqrt{141} = 20 \times 11{\cdot}874 = 237{\cdot}48$, and $237{\cdot}48 \times \frac{60 \times 60}{5280} = 162$ miles per hour.

HENRY ADAMS.

Making a Schoolroom Cooler.

WOODBRIDGE.—NORMAN writes: "A schoolroom is built of wood, covered with corrugated iron and lined with felt inside and ¾in. matchboards. It is quite open to the apex of the roof and is well ventilated, but in the summer the heat is unbearable. Can you suggest an inexpensive means of reducing the heat?"

We advise you to use slag-wool slabs for lining the interior, filling in the cavities with slag-wool.

British Fire Prevention Committee Tests.

BIRMINGHAM.—A SUBSCRIBER writes: "Do the British Fire Prevention Committee undertake tests free of charge? If not, what are their charges and to whom should I apply? I have a patent for improvements in asbestos for buildings, but through lack of funds cannot put in on the market."

The British Fire Prevention Committee do not undertake on their own account fire tests of patented constructions or specialities of individual makers: these are subject to an independent tariff consisting of (1) preliminary expenses, (2) establishment charges and (3) testing charges—the first £5 5s., the second from £10 to £50, and the third from £50 to £150, according to the nature of the test and the group to which it belongs. A full account of the Committee's requirements will be found on p. 347 of our issue for January 1st, 1902: further particulars can be obtained from the offices of the Committee at 1, Waterloo Place, Pall Mall, S.W. Patents are generally a speculation and (especially such as you own) need to be well backed with capital. Your best course would be to approach some manufacturer of fire-resisting materials and endeavour either to sell your invention to him outright or on a royalty; but this is no easy thing to do.

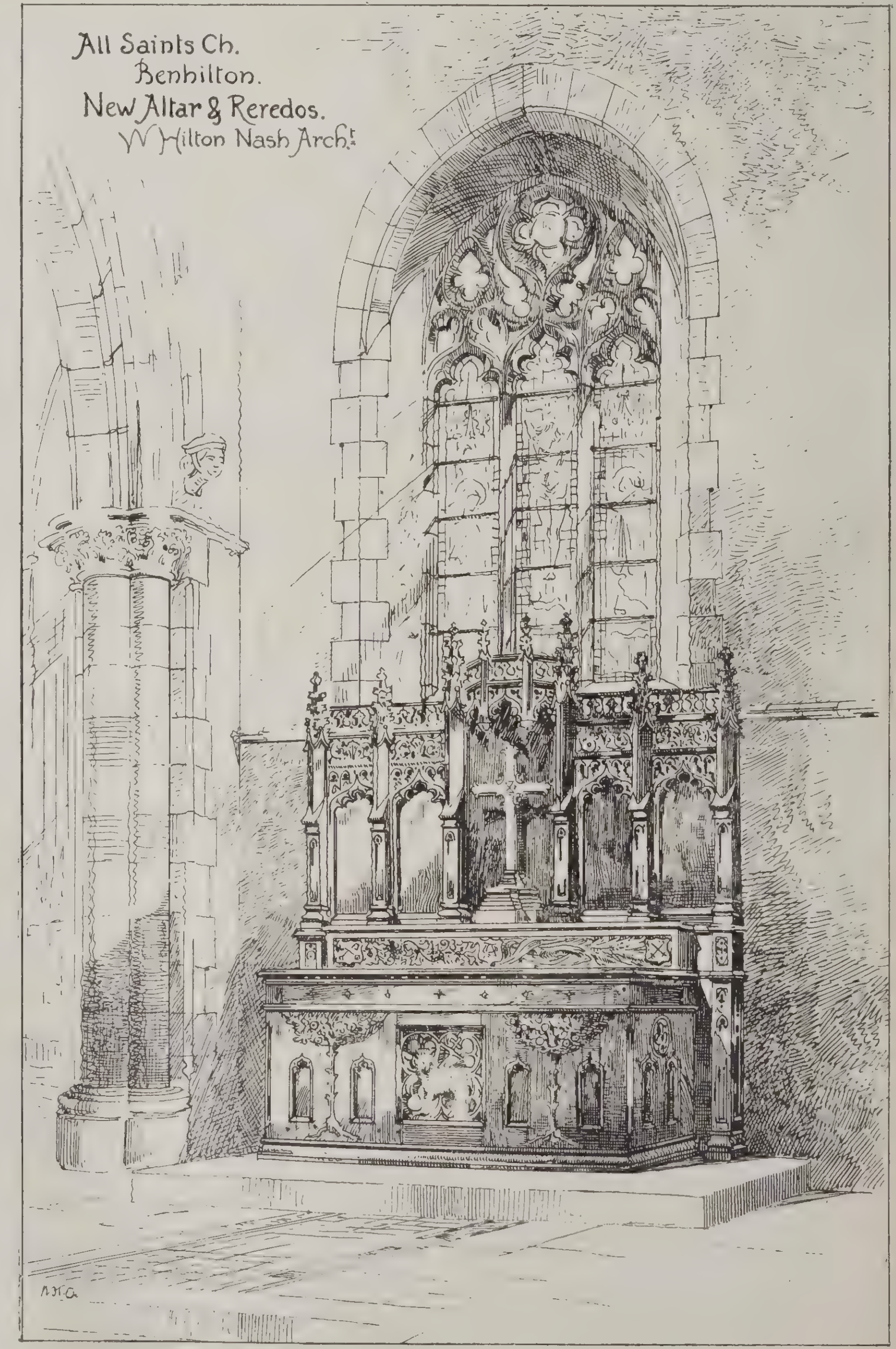
Noisy Cistern.

CARDIFF.—CARDIFF writes: "The accompanying plan (not reproduced) shows the position of a W.C. and library in a house. The discharge and refilling of the cistern are heard too plainly in the library. Would the removal of the whole apparatus to the outside wall do away with the nuisance, or is there some other method, without altering the position, by which a silent flush or refill can be obtained?"

The sketch plan does not give any dimensions, so it is impossible to say whether space is available for putting the apparatus on one of the other walls. At the same time, it is inadvisable to put the cistern on the outside wall, where it would be liable to freeze in winter. The best method would be to instal a cistern with silent refill and flush on the interior wall against the staircase, and put a sound-deadening covering to the library wall, either of felt, patent slabs, sawdust, &c.

J. H. E.-D.

The Reredos in Benhilton Church, illustrated on this page, was recently executed by Messrs. Harry Hems & Sons, of Exeter, from designs by Mr. W. Hilton Nash, F.R.I.B.A. It is entirely of Devonshire grown oak, and is in the fifteenth-century style. On either side of the altar are sunk and traceried panels with apple trees in bold relief. The super-altar is richly carved. In the centre is a shield with the monogram IHS, and on the other shields are carved the crossed keys of St. Peter and the swords of St. Paul. Tendrils of the Vine and the wheat as emblematical of the Blessed Sacrament are carved on either side. The whole of the work is put together without nails or screws, all the tenons being fastened by oak pins.


All Saints Ch.
Benhilton.
New Altar & Reredos.
W Hilton Nash Archt.

Correspondence.

Winchelsea Church.

To the Editor of The Builders' Journal.

Brighton.

Sir,—On p. 179 of your issue for May 6th "G. A. T. M.," in answer to a correspondent, says that the nave of Winchelsea Church appears never to have been built. Mr. W. D. Cooper in his "History of Winchelsea" gives a plan of the church as originally built, showing a cruciform structure about 200ft. in length, with a nave of four bays. He also remarks that "no traces of the foundation (of the nave) after a very recent (1850) and diligent search can be found, except those of the great central piers and a small portion of the wall at the south-west corner of the south aisle. Near the south-west angle of the church stood until 1790 a campanile or bell tower, when it was removed; the foundations of the nave were also taken up, and the stones used for the repair of Rye Harbour." When visiting the church about four years ago, the sexton told me that in digging graves to the westward of the remaining part of the church he frequently came upon paving tiles similar to those now in the chancel. These facts, I think, prove that "G. A. T. M." was wrong in stating that the nave was never built.—Yours truly,

JOHN PATCHING.

The R.I.B.A. and Architects' Registration.

To the Editor of The Builders' Journal.

London, S.W.

Sir,—This subject has been under consideration in this country for upwards of twenty years, and whilst the general body of the profession have been in favour of the principle of statutory registration, side issues have from time to time been raised that have prevented the attainment of the main object.

Feeling that this was the case, a circular was recently issued only to fully-recognized members of the profession, asking in each case for their individual approval or disapproval of the *principle* of the statutory registration of duly-qualified architects.

The response has been most gratifying to the supporters of the principle. Something like two thirds of the entire profession have responded, numbering thousands; and of these only 168 are against registration, and all the remainder for it. A considerable majority of members of the Royal Institute itself are in favour, and its allied provincial societies almost unanimously so. Of the remainder of the profession, some are too distant to reply in time, others do not take the trouble to reply at all but personally express themselves as being in favour of the movement.

With these facts before me, as one who signed the original circular letter I ventured at the annual meeting of the R.I.B.A. to question the wisdom of the attitude assumed by the Council of this body as expressed in the circular issued by them to the allied societies in the provinces. I was supported in my contention to the extent of being nominated there and then, directly from the meeting, for a seat on the Council so that all provincial and other members might have the opportunity of officially recording their verdict upon the subject *by voting in support of my candidature* if they desire registration and against it if they do not.

It is for the purpose of explaining precisely how matters stand that I issue this circular. I have no quarrel with the Council of the R.I.B.A. nor with any of its members. I recognise that they have a right to their opinions on this or any other question as much as I and those who think with me have a right to ours. And it is only when they give quite a different rendering to what I believe to be the general wish of the profession, and say they do so in their *representative* capacity, that I join issue and place my services at the disposal of my professional confrères so that the question may be fairly tested.

To make the issue quite clear, I beg to announce myself as a strenuous advocate for the statutory registration of properly qualified architects. The details I do not attempt to go into at present, nor is it necessary; but when they have be considered I desire that the Royal Institute shall have the chief place assigned to it in the consideration and promulgation of them.

Upon this issue I ask for the vote and interest in my candidature of every Fellow and Associate who desire to give the subject of registration their active and practical support, and always to bear in mind that sympathy in a certain direction is of no use whatever unless it is backed up by votes.—Yours truly,

SILVANUS TREVAIL, F.R.I.B.A.

MANCHESTER SKIN DISEASES HOSPITAL.

As announced in our last issue Messrs. Thomas Worthington & Sons, of Manchester, have been awarded the first premium in the competition for a new hospital for skin diseases for Manchester and Salford, to replace the wholly inadequate building in Quay Street.

It is estimated that the new buildings will cost about £22,000, which, added to the sum of £13,000 already given for a most eligible site adjoining the existing hospital, brings the total up to £35,000. Towards this promises of donations amounting to £25,000 have been received. The demands upon the hospital accommodation are enormously increasing. At present it is only possible to accommodate six in-patients, and many people have to be included among the out-patients who ought never to leave the doors of the hospital until they are cured. The new building will provide for thirty in-patients. Messrs. Worthington's plans are drawn with a view to a greater part of the buildings—practically a complete hospital—being erected on the vacant site without interference with the hospital work, which, on their completion, can be transferred to the new quarters, the existing buildings being then demolished and the structure completed.

In the new hospital all the administration rooms will be near the main entrance. The patients' entrance will be in Byrom Street, set back in a forecourt, on each side of which a wing of the building will run out to the street line. The arrangement is a most convenient one, inasmuch as it will prevent crowds of patients gathering on the footway and street, and will make their entrance quiet and retired. It is suggested that the building should be faced with Runcorn stone and brick. Decorative features have been introduced on the Quay Street façade and at the ends of the wings facing Byrom Street, but the elevations on the Artillery Street side and facing the vacant land will be treated quite simply. The accommodation will include a set of self-contained chambers for the house surgeon, room for the matron, sitting- and dining-rooms and sleeping accommodation for eight nurses, male and female wards for thirty beds, operating and anæsthetic rooms, laboratory, "light" and Rontgen-ray rooms, dispensary, waiting- and dressing-rooms for out-patients, stores, board-room, offices, and all the necessary administrative apartments. In the wards, which are all on the second floor, 1,200 cub. ft. of space has been allowed for every bed, and special care taken to secure light and the free circulation of air. The sanitary blocks are completely cut off from the wards by cross-ventilated bridges. Heating is to be carried out by means of hot air, hot water and open fires.

THE BUILDING TRADE IN SOUTH AFRICA.

Architects and builders in Johannesburg are busy, and save for scarcity of stock in some lines they report that the condition of the building trade could not be more satisfactory. Architects interviewed all seemed perfectly satisfied, and said that there was now more building going on in Johannesburg than during any other time in its history. This they considered was a most favourable indication for the future, when the present scarcity of money and railway delay in delivering goods were taken into account. Many large schemes, of course, were in abeyance because of the stagnation in share values, and one architect stated that his observation, extending over many years, had proved that the real estate market and building trade depended entirely on the state of the money market, and that the present activity was due principally to the immediate necessity of providing offices and houses, and not to any comprehensive provision for future demands. One point of improvement in dwelling-houses is that the majority of these are now being built of stone and brick, instead of wood, as was formerly the general case. This movement towards solidity evidences a belief in permanence of residence, and therefore a confidence in the future of Johannesburg.

Nearly all large orders in the building trade have been placed, and current trade in consequence is slack. Stocks are ragged, and flooring and ceiling are scarce. Prices, however, have shown no relaxation, and a large increase of trade is anticipated within the next six weeks. Bricks, lime and cement are in good demand, but much dissatisfaction is expressed over the apparently high price of cement.

Prices of Building Materials.

Portland cement, per cask	36s. to 37s.
Lime, per bag	5s. 6d. to 7s.
Bricks,* slop (burnt)	50s. to 55s.
" common	55s. to 60s.
" stock	60s. to 70s.
" facing	£6 10s. to £8
" pressed	£13 to £14 10s.
" unburnt	25s. to 30s.
Deals, 17in. and under	10½d. to 11d.
" 18in. and 19in.	11d. to 11½d.
" 20in. and over	11½d. to 1s.
Oregon logs, 6×6, per cub. ft.	5s.
" 12×12, long lengths, per cub. ft.	5s.
Ceiling	3d.
Flooring	4½d.
Windows, 8×10	32s. 6d.
" 10×12	37s. 6d.
" 15×30	40s. 6d.
" 18×36	50s.
Doors, 2ft. 6in.×6ft. 6in×1¼in.	13s. 6d.
" 2ft. 6in.×6ft. 6in.×1½in.	14s. 6d.
" 2ft 6in.×6ft 8in.×1½in.	16s.
Galvanized iron, 6ft. to 10ft., per ft.,	7½d.
Shelving, 1×12, D 2 s, per ft.	6d.
Clear pine, D 2 s	7d.
Mouldings, O.G., 1¼×1½in.	1¼d.
" " 3in.	3¾d.
Sterling, 4½in.	3d.
" 9in.	5d.
Cornice, 3in.	2d.
" 6in.	4½d.
Architraves, 3in.	2½d.
" 6in.	5½d.
Scotia, 2in.	3¼d.
" 1½in.	2d.
" 1in.	1½d.
Fret-cut fascia, 6in.	1s.
" " 7in.	1s. 1½d.

—(From "The South African Mines, Commerce and Industries," Johannesburg, April 18th, 1903.)

* These prices are for 1,000 at kiln, and delivery to buildings in town 15s. per 1,000 extra.

Keystones.

A Mausoleum at Plevna is being erected to the Russian officers killed during the siege of the town in 1877.

Mr. B. B. Morgan, of the firm of Morgan & Buckingham, of Norwich, has been appointed architect and surveyor to the Norwich Board of Guardians.

A Large Block of Flats in Marylebone Road, W., known as the Manor House, is being erected from designs by Messrs. Gordon & Gunton, of Blomfield Street, E.C. The builder is Mr. Carmichael.

St. Andrews Street Baptist Church, Cambridge, is being remodelled, and to a large extent rebuilt with an entirely new frontage and interior fittings, making use as far as possible of the foundations and side walls of the present building. The architects are Messrs. George Baines, F.R.I.B.A., and R. Palmer Baines, 5, Clement's Inn, Strand, London W.C.

R.I.B.A.—A meeting of the Royal Institute of British Architects was held on Monday evening at 9, Conduit Street, W., the president, Mr. Aston Webb, occupying the chair. A paper on "The Beginnings of the Egyptian Style of Architecture" was read by Prof. Sir Martin Conway. Owing to the great pressure on our space we are obliged to hold over our report of it till next week.

Some French Memorials.—The statue of Alfred de Musset, which was executed by the sculptor Pierre Granet and refused a place in Paris, is now to be erected at Neuilly, where de Musset spent a great part of his youth. M. Leroux is about to undertake the monument which is to be erected to the memory of René Saint-Just at his birthplace. M. Rodin has completed the model of the monument to be erected to Puvis de Chavannes by his brother workers in art.

Leith Poorhouse Competition.—The Leith Parish Council last week considered the plans for the new poorhouse, with a report by the assessor, Mr. R. D. Sandilands, architect, Glasgow, when it was resolved to award the first premium to design No. 2, by Messrs. Scott and Compbell, architects, Edinburgh. The second premium was awarded to design No. 7, the author of which is Mr. W. C. Laidlaw, architect, Edinburgh.

Competition Reform Committee.—The Committee disapproves of the existing conditions of the competition for a public library at Cubitt Town, Poplar, but is endeavouring to get them revised. Members are requested to abstain from competing unless they receive a further communication to the effect that the conditions have been satisfactorily revised. The reasons of complaint are that there is no professional assessor, and that the Council do not bind themselves to adopt or carry out any of the designs submitted, &c.

The Stratford-on-Avon Cottages.—At a meeting of the O.P. Club held at the Criterion Restaurant on Sunday evening Miss Marie Corelli, after freely insulting Mr. Carnegie, continued to spread her mistaken accounts about the cottages in Henley Street, Stratford, proposed to be demolished. Mr. Bird, the mayor of the town, opportunely points out that the petition signed at the meeting of the Selborne Society on May 5th, when Miss Corelli first made her high-sounding statements, was also signed by members of the archæological societies on the strength of it, but without knowing the real facts. The reconstruction will be made by Mr. Holton, architect, in consultation with Mr. J. A. Cossins as representing the Society for the Protection of Ancient Buildings.

A new Free Library at Kingston-on-Thames has been opened. Mr. Alfred Cox was the architect.

Another "Skyscraper."—It is proposed to erect a seventeen-storey "sky-scraper" on a plot of ground, 26ft. by 40ft., at the corner of New Street and Exchange Place, in the very heart of the Wall Street district, New York. This will be the smallest area on record for the foundation of such a lofty building.

A Rawtenstall Competition.—The Rawtenstall Corporation have appointed Messrs. Butterworth & Duncan, assessors in the competition for a Free Library, Municipal Offices, and Town Hall, which they propose to erect on a site in the centre of the town at a cost of over £30,000, and for the plans of which they propose to offer premiums of £100, £50, and £30.

South Cliff Congregational Church, Lowestoft, was opened last week. The church will consist of nave and double transepts, but the latter are not yet built. The facings are of red bricks and the dressings of white Costessey work. The roofs are of open-timber construction of the hammer-beam type. The contract was let to Mr. John Ashby, "Woodbury," Lowestoft, and amounted to £1,698. The accommodation of the building is about 430 adults. The architects are Messrs. George Baines, F.R.I.B.A., and R. Palmer Baines, 5, Clement's Inn, Strand, London, W.C.

A Cape Town Competition.—Eight sets of designs were submitted in competition for the City of Cape Town Public Baths, to be erected in Caledon Square. The assessor was Mr. F. R. Roberts, architect, Durban. Messrs. MacGillivray & Grant, Cape Town, were awarded first place; Messrs. Sherwood, Pitts & Holland, second place; and Mr. A. Wyatt Papworth, A.R.I.B.A., third. The scheme comprises large swimming baths, first and second class; ladies' and gentlemen's slipper baths, first and second class; Turkish baths for ladies and gentlemen; and the usual laundry and other accessories of such an institution.

The Rural Housing and Sanitation Association held a meeting last week. The Rev. T. C. Fry, who presided, remarked that it was not realized that the question of rural housing was quite as important as the question of urban housing. Mr. Rider Haggard said he had not the slightest doubt that there was an extraordinary lack of cottages in the rural villages, for the reason that such cottages decayed in the course of time and were not rebuilt, and, again, because in the present day people would not live in the houses in which their fathers thought fit to dwell. The only chance to improve the state of things was to persuade the Government to advance money at a reasonable rate of interest, including a sinking fund.

The Church of St. Andrew, Swanwick, has had a new tower added to it on the north side as a memorial to Queen Victoria by Mr. FitzHerbert Wright, High Sheriff of Derbyshire. The tower forms a porch to the north aisle. The upper stages comprise the ringing chamber, clock chamber, and the belfry containing a ring of five very fine bells. The work is late Decorated in style, the material being fine selected Coxbench stone, from the well-known quarry of Messrs. W. H. & J. Slater. The five bells were cast by Messrs. Taylor & Co., of Loughborough. The old church has been cleaned and re-decorated throughout, and the seats varnished, by Mr. G. Potter, of Derby. The architects for the work were Messrs. Naylor & Sale, Iron Gate, Derby. Mr. J. R. Naylor, F.R.I.B.A., was a pupil of the late Sir Gilbert Scott. The contractor is Mr. Alfred Smith, of Gordon Road, Derby. The contract amounts to over £4,000.

Builders' Notes.

The Additions to the St. William's Infectious Hospital, Rochester, has been supplied by Messrs. E. H. Shorland & Brother, of Manchester, with their patent Manchester stoves with ornamental tiled sides.

The Fireproof Construction of the Columbian Fireproofing Co., Ltd., 37, King William Street, E.C., has been adopted for the New Lamp Black Works at Greenwich for Messrs. Binney & Smith Company, including the casing the steel girders, and glasso finish to roofs. The architect is Mr. J. Thorman, of Borough Hill, Royal Hill, Greenwich.

Clifford's Inn was last week sold for building purposes to Mr. William Willett, the well-known builder, of Sloane Gardens, for £100,000. A reservation was made that the fourteen surviving members of the Society of Clifford's Inn should retain the seventeenth-century oak panelling and carved and other woodwork, including a handsome mantelpiece, in one of the rooms of the Inn. It is understood that these will be offered to South Kensington Museum.

Change of Address.—The office of the general manager of the Simplex Steel Conduit Co., Ltd., has been removed from 20, Bucklersbury, to larger and more convenient premises at Westinghouse Buildings, Strand, W.C. (1st floor), to which address all communications for his personal attention should be forwarded. The Company's London offices and stores will remain as at present, at Mansion House Chambers, 20, Bucklersbury, E.C.

The Building By-laws Reform Association, which was recently formed to secure that official control of private buildings shall not extend beyond the demands of public health and safety, met last Wednesday at the offices, 45, Parliament Street, Sir William Chance, Bart., in the chair. The Duke of Westminster was elected president. A proposal was made for the appointment of a special committee to consider and report on the amendments required to secure the removal from existing by-laws of those provisions which unreasonably encroach on individual liberty. A long discussion followed in which Mr. W. M. Acworth, Mr. Lacy Ridge, Mr. A. H. Clough, Mr. Mark H. Judge, Mr. W. Henman (Birmingham), Mr. T. M. Shallcross (Liverpool), Mr. Thackeray Turner, Mr. E. D. Till and Mr. R. A. Read, hon. secretary, took part. The special committee was appointed and letters asking for advice for the amendment of by-laws at Guildford, Bucklow and Bradfield were referred to it.

Walsall Carpenters' and Joiners' Dispute as to working rules and increase of wages has been settled. It was submitted to the arbitration of Mr. A. A. Hudson, of the Inner Temple, barrister-at-law. The arbitrator's award provides that the rate of wages is to remain as before, namely, 8½d. per hour. The hours of work from December 1st to 15th inclusive, and from January 16th to 31st inclusive, to be from 7.30 a.m. to 4.30 p.m., with one hour for meals; Saturdays, 7.30 a.m. to 1 p.m., with half an hour for breakfast; from December 16th to January 15th inclusive, to be from 8 a.m. to 4.30 p.m., with half an hour for meals; Saturdays, 8 a.m. to 1 p.m., without allowance for breakfast. The other working hours to remain as before. Overtime made at the request of the employer, after the ordinary hours of work, to be at the rate of time and a quarter for the first two hours and time and a half afterwards; Saturdays, if made at the like request, time and a half after 1 p.m. Other minor alterations have been made in the working rules.

S.K. EXAMINATIONS, 1903.

BUILDING CONSTRUCTION:
Elementary Stage.

[The examination in this subject lasts four hours. You are permitted to answer only seven questions. Questions marked with an asterisk have accompanying diagrams. The value of marks is attached to each question.]

*1. For what purpose is this tool used? Describe how the workman holds it when he uses it for ordinary work. (12)

(*a*) For cutting window-glass to sizes.

(*b*) The workman holds the tool as a pen or pencil is mostly held, between the thumb and the index and middle fingers, with this difference that the stem or stalk of the glazier's diamond passes up between the index and middle fingers.

(NOTE.—This answer is quite enough. The student may be disposed to tell all he knows about glazier's diamonds, as that each diamond must be held in a special and particular way, that the workman knows by the sound of the cut whether he is making a cut or merely scratching the surface, &c. These details are not asked for.)

2. What are meeting rail, muntin, tread, riser, going, lacing course, quirked ogee, coarse stuff, gauged stuff, droved work, rusticated? (Full marks will be given for *nine* correct definitions) (12)

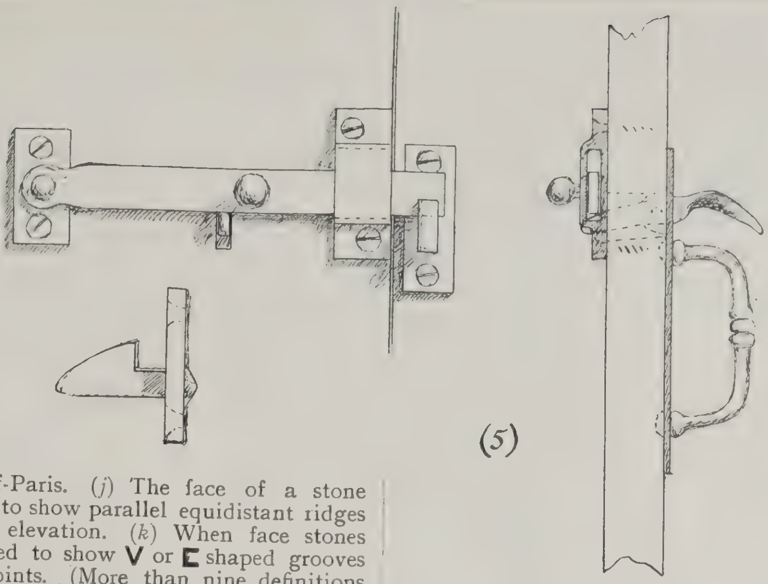
(*a*) In a window of several sashes the rails of two sashes which meet or overlap are meeting rails. (*b*) The central vertical piece of framing of a door. (*c*) The board forming the top surface of a step; the top surface of a step. (*d*) The board forming the vertical face of a step; the vertical face of a step. (*e*) The horizontal distance between two successive risers of stairs. (*f*) A continuous bonding course—as one or more courses of bricks or tiles in rubble of flints or other small-sized stones. (*g*) See sketch. (*h*) Mortar mixed with cowhair suitable for the first and floating coats of plastering. (*i*) Mortar, &c., for which the proportions of constituents are "gauged" or measured; coarse stuff to which a measured quantity of plaster-of-Paris has been added; lime putty to which has been added a proportion of plaster-of-Paris. (*j*) The face of a stone chiselled to show parallel equidistant ridges of slight elevation. (*k*) When face stones are dressed to show **V** or **⊏** shaped grooves at the joints. (More than nine definitions need not be given; if, however, the student is in doubt as to the correctness of some of the nine on which he depends, he is not debarred from writing definitions to all the terms in the question.)

*3. In a certain town electric wires are borne on brackets like that shown; given the weight at A as being 40lbs., assuming that this pressure may be transferred to the point B, where the bracket bears against the slate as shown, and assuming that the directions of the reaction and of the third force are as shown, what is the amount of the reaction in lbs.? (15)

See illustration. This work is a sufficient answer to the question.

*4. Make a tracing, in ink, of this drawing and of the writing and figures. (The Indian ink should be sufficiently thick to give opaque lines suitable for photographic printing; the lines should be well defined, uniform in breadth, having firm unbroken edges, and they should neither stop short of nor go beyond the proper points.) (15)

The terms of the question give sufficient advice. It should be remembered that the white lines on the print are somewhat finer than the black lines of the tracing.


(5)

5. Sketch (approximately) to the scale of $\frac{1}{2}$ a good strong thumb-latch for a door; also the keeper, or catch, to be fastened to the door-frame. Describe what you consider to be important points in a good latch such as you sketch. (12)

See illustration. The corners of the end of the latch should be slightly rounded, and there should be no sharp points or hooks; usually the shank of the thumb-piece projects inside, sharpened and turned down; such projection is not required where the latch has a knob as shown; as such doors often "slam-to," the piece in which the latch slides should be fairly strong, and the keeper should have a gentle slope; the keeper should be strong, so as to withstand a reasonable pressure forcing the closed door inwards.

6. (*a*) What is a bib-cock? (*b*) Describe how a "wiped joint" is made. (12)

(*a*) The illustration shows a beer-tap: bib-cock is generic; it means any cock having a turned-down delivery point. (A drawing is not absolutely necessary for this answer; or the roughest indication might be shown to make the student's answer definite.)

(*b*) The pipe-ends should be neatly trimmed so that there will be no roughness inside the connected pipe at the joint; the ends should be made truly circular; one end should be slightly opened to allow the other end to enter about $\frac{1}{4}$in.; the entering end should be smudged to prevent the solder going into the pipe; the joined pipe should be firmly fixed; the pipes should be shaved clean for the length of the joint and smudged neatly at the limits. Apply the molten solder first at a smudged end to get the pipe heated, and work it neatly with the cloth, adding solder from the ladle as needed, towards the other end, giving the finished joint the proper shape.

7. A rectangular rainwater tank weighs 300 lbs.; it is 6ft. by 4ft., and it is 2ft. 6in. deep (internal dimensions); it is supported with its bottom horizonal; owing to a stoppage of the overflow pipe it is filled with water. (*a*) What is the pressure of the water per sq. ft. on the bottom of the tank? (*b*) What is the weight of the tank and water? (*c*) How many gallons of water does the tank contain? (14)

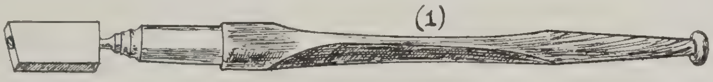
(*a*) $62{\cdot}5 \times 2{\cdot}5 = 156{\cdot}25$; $156{\cdot}25$ lbs. per sq. ft.

(*b*) 6ft. × 4ft. × $2{\cdot}5 = 60$ cub. ft. of water at $62{\cdot}5$ lbs. per ft. $= 3750$ lbs. $3750 + 300 = 4050$. Weight of tank and water = 4,050 lbs.

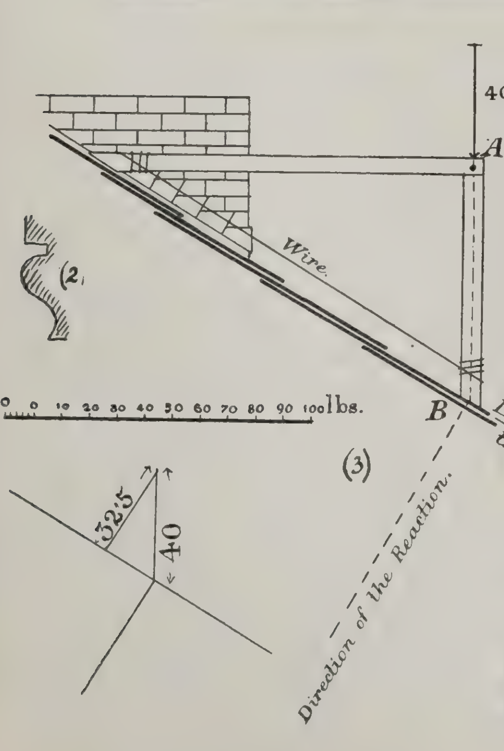
(*c*) $60 \times 6{\cdot}25 = 375$ gals.

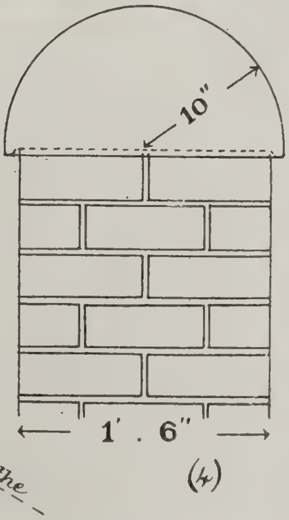
Note—A cub. ft. of water weighs $62{\cdot}5$ lbs.; it also contains $6{\cdot}25$ gals

8. The slates on a roof are 24in. by 12in.; an average slate weighs 7 lbs., the slates are laid with a lap of 4in.; what is the weight


(1)

(2,


40lbs.
A
Wire.
B
10 0 10 20 30 40 50 60 70 80 90 100lbs.
32.5
40
Direction of the third Force.
Direction of the Reaction.
(3)



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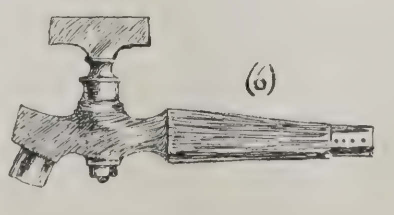
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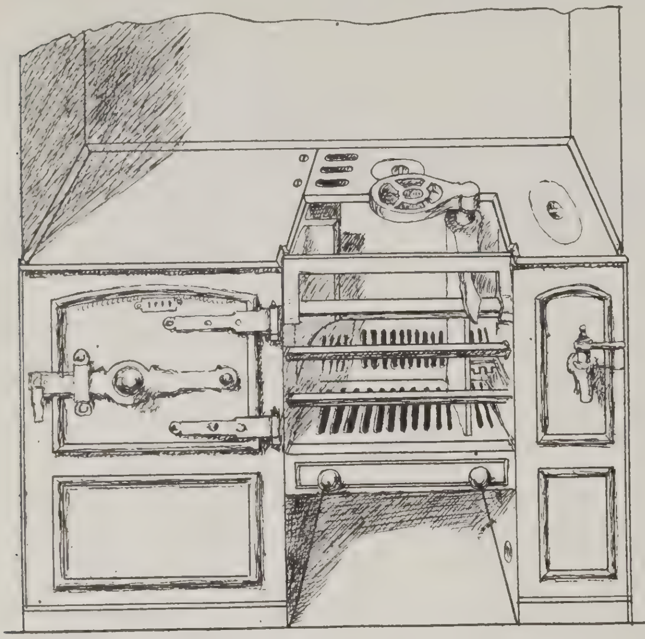


(12)

of slates which cover an average square of roof? (14)

One slate covers 120 sq. in. $\left(\frac{24-4}{2}\times 12\right)$. A square of slating is 14,400 sq. in.; it will be covered by 120 slates at 7 lbs. Weight of slates, 120 × 7 = 840 lbs.

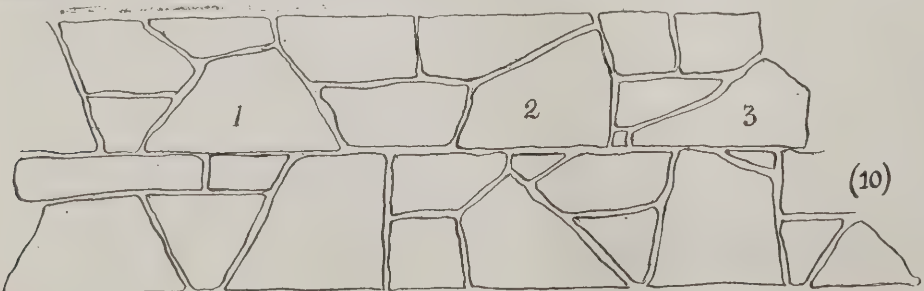
(A question involving the knowledge of the mode in which slates are placed on a roof has been given in every paper for the last three years; the examiners in last year's report are dissatisfied with the answers to the questions; it would appear that essential matters of this kind are insisted upon by the examiners, and students and teachers would do well to read the reports on examinations.)

9. Draw to the scale of $\frac{1}{12}$ the elevation of a casement window (not a *pivoted* sash) 4ft. by 2ft. 6in. (sash size); a single sash in four panes; show reveals and stone sill; sketch, approximately to the scale of $\frac{1}{4}$, the essential details of the hinges and fastener. (14)

See illustration. I put four hinges; the glass should be cut to be close-fitting; I would put brass angle-pieces at the corners (not shown) to assist the mortises and tenons; the reveals are shown by the outside vertical lines. (The drawing, without this explanation, is a sufficient answer.)

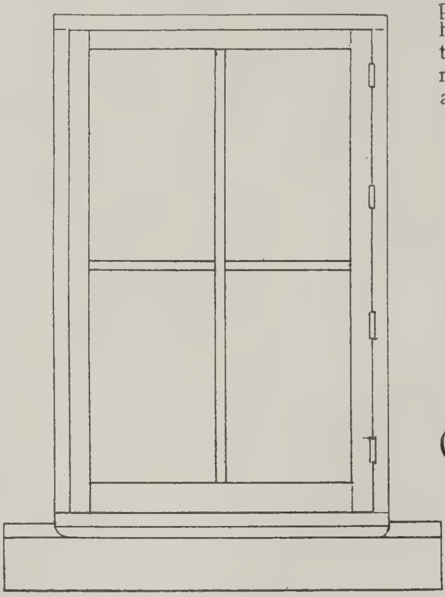
10. Sketch to the scale of $\frac{1}{12}$ the face (elevation) of a completed course of rubble masonry (the course being, say, 15in. deep); sketch on top of this completed course portions of a second course in process of building; explain why the stones shown—of the second course—are placed where you sketch them. How does the mason keep his work truly in line? How does he use his plumb-rule in rock-faced work? (14)

(*a*) See illustration. See note to question 8. (*b*) The stone 1 is placed so as to cover the two upright joints shown; 2 and 3 are also placed as the mason judges best with reference to the joints below; in this way he "breaks joint." (*c*) By straining a line horizontally in the plane of the face of the wall (the line is supported at intervals on stones set in the course to prevent undue "sag" of the line; the line is fastened to these stones by a stout straw or other sufficient slight material doubled to form a loop and attached to the stone by a pat of mortar covered with a spawl). (*d*) The line is set plumb over the "edge" of the course below, using the straight edge of the plumb-rule; the "plumb" of two or three courses may be tried by entering a nail in the edge of the plumb-rule long enough to keep the plumb-rule from touching the "rock"; the head of this nail is placed against a point in the true wall face; and by use of his 2ft. rule the mason keeps the edge higher up at the same distance (the length of the projection of the nail) off the line or off the top edge of a completed course.



(10)

11. A plasterer is laying on the first coat of coarse stuff on lathed work, and you see him driving the trowel at right angles to the direction of the laths. This is wrong. Can you explain why it is wrong? (12)

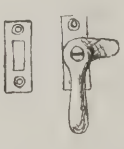


When the plasterer drives his trowel at right angles to the direction of the lathing the edge of the trowel presses, with all the trowel pressure, upon each individual lath; the laths are sprung excessively upwards, with the result that the coarse stuff which passes through between them is torn by the play of the laths and there is no keying. It is not good to drive the trowel in the direction of the lie of the laths; this drags the keying, but this is not an error that a plasterer is likely to commit. The proper direction is at an angle of, roughly, 45 degs.; in this position the trowel edge presses on four or five laths and the stuff leaves the trowel with sufficient freedom.

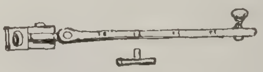
(Any student who is a practical plasterer will be able to answer this question. It is a matter with which a clerk of works should be conversant, and these examinations are intended to promote the education of clerks of works among others. The exercise of a little of the quality of common-sense should enable a student to answer the question; a student should get as much credit as his answer to a question of this kind deserves, even if he does not give the above, which is, I think, the correct answer.)

12. Sketch to the scale of $\frac{1}{8}$ (approximately a fireplace—grate, oven and boiler—suitable for the kitchen or living-room of an artizan's cottage; explain the setting and flues. (14)

See sketch. (A student could not be expected to put in as many details as I show in my sketch, because for that I have the advantage of a catalogue illustration before me; but his sketch should show the examiner that he had intelligently noticed some simple form of kitchen range suitable for a workman's cottage.) This range costs less than 50s.; it has an L boiler, it is arranged so that the heat of the fire gets underneath and around the boiler, by the boiler being set clear of the brickwork all round, and circulation of hot air and gases is promoted by the three openings shown on the plate at the inner end of the boiler. There is not a flue to the oven in the usual sense, but the oven is set leaving everywhere $1\frac{1}{2}$in. clearance from the brickwork, and it has two heavy projecting pieces reaching into the fire which heat and conduct their heat to the side of the oven. There are no range flues to this range except the three openings noticed above.

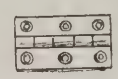


Brass Fastener.



Brass Stay

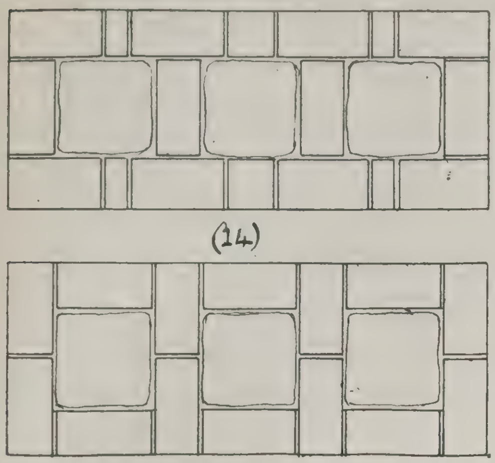
(9)



Brass Butts.

13. Describe how you would prepare (from materials in the usual commercial conditions) a pot of light-coloured paint for fourth coating, inside work; give a name to the shade of colour you produce. (12)

I assume that I have white-lead ground in oil and raw Turkey umber, also ground in oil. I assume that the three coats already given to the work have been such that the third coat "bears"—that is, there are no flat or dead spots—and that the third coat is very nearly of the intended finished shade. Because I wish the finished work to retain its colour and not grow yellower in shade, the oil I use for thinning will be raw linseed oil; the work is not sufficiently well brought up for flatting, so I do not make the paint flatting stuff, but I use enough turpentine to make it somewhat of that character. Notwithstanding the abuse of "patent driers" in the books, they are very commonly used, and I shall use them. Mix as much colour as will coat all the work to be done, because it gives some trouble to exactly match a



shade. Stir up the white lead with the oil in a paint-pot, add a sufficient quantity of driers, add as much Turkey umber as will give the desired tint; strain through muslin into a second paint-pot, working the stuff through the muslin with a paint brush; thin with turpentine. I call the shade drab.

14. Draw plans of two successive courses of a half-brick built chimney-stack of three flues (scale $\frac{1}{12}$); show mortar joints as double lines; show pargetting. (12)

See illustration. (It is not necessary to write the word "pargetting.")

Obituary.

Mr. Alban Cole, of Tuffley, late of the Rea Farm, Quedgeley, died last week at the age of seventy-one years. The deceased was formerly manager of Messrs. Eassie & Co's joinery department, and on the transfer of that business to the Gloucester Railway Carriage and Wagon Co., Limited, he acquired the New Inn, Tuffley.

Electrical Notes.

The Birmingham Tramways are to be municipalized.

The Central Tower of the Administration Building at the St. Louis Exposition will be illuminated with 6,000 incandescent lamps. The current for this will be drawn from the power plant on the University portion of the grounds.

The New Electric Railway in Liverpool.—The result of the first week's working of the Mersey Railway, which runs a three-minutes' service by electricity and has superseded steam traction, shows an increase of 37,000 passengers compared with the previous week and 45 per cent. increased income, and 40 per cent. in excess of the corresponding week last year.

Scottish Central Electrical Power Bill.—The County Council of Stirling intends to oppose this Bill, and the Law and Parliamentary Committee has been instructed to endeavour to secure the co-operation of the counties of Linlithgow and Clackmannan, and any burghs which might desire to be associated in the opposition. The Council does not oppose the Bill as a whole, but protests against certain clauses.

Reduced Charges for Current at Birmingham.—The Electric Lighting Committee of the Birmingham Corporation has recommended the following reduced scale of charges:—Lighting: for the first 300 units per quarter, from 7d. to 6d. per unit; beyond, from 4½ to 4d. For power and day-load lighting: the first 300 units per quarter, 3d. per unit as against 4d. for the first 100 units; up to 3,000 units, 2d., and beyond, 1½d., against 2d. per unit over 100 units. Meter charges have also been reduced to 2s. 6d. per quarter up to 5 ampères, 3s. up to 25, and 5s. up to 100.

Nottingham Tramways.—During the twelve months ended March 31st the Nottingham Corporation electric tramways carried 24,534,630 passengers, and the total receipts amounted to £115,149. The undertaking represents a capital expenditure of over half a million sterling.

Kingston Street Lighting.—The extension of street lighting at Kingston-on-Thames with "Gilbert" 6ft. carbon arc lamps of a similar pattern to those used on the Thames Embankment has just been completed, and the river front, Kingston Hill, and several other parts of the town are now lighted by these lamps, which are run at 1,100 volts (direct current), and burn nearly seventy hours without re-trimming. A novel feature of the new installation is the Gilbert patent switch, by means of which incandescent lamps are automatically switched on and off as required by means of the arc-lamp circuit.

The New L.C.C. Trams on the new electric tramways between Tooting and Westminster and Blackfriars bridges, opened last Friday, carry 66 passengers—28 inside and 38 outside. They are supported on bogie trucks of the maximum traction pattern, and each car is driven by two electric motors of 35 h.p. each. All the cars are painted a uniform chocolate colour. Along each side run seats of light pierced wood, and in the middle of the car there is a sort of low partition. The seats on top are of the "garden" type with reversible back rests. The "conduit" system has been adopted. Whether the Council was right in this decision has been, and still is, the subject of keen controversy. The trolley is cheaper by £12,000 per street mile or more; it can be put up more rapidly; and it does not involve such extensive interference with the road surface and the traffic while under construction or repair, nor does it require the use of the third rail, with its open slot, or elaborate and expensive cleaning. On the other hand, the conduit gets rid of unsightly posts and cables. The current is supplied, for the present, from a temporary generating station at Loughborough, pending the completion of the main station at Greenwich, which will be one of the largest in the kingdom, with plant working up to about 40,000 horse-power. There are sub-stations at Clapham, Brixton Road and the Elephant and Castle, where rotary transformers reduce the current from 6,600 volts to 550 volts, at which power it is transmitted to the distributory cables. A double track of 4ft. 8½in. gauge is employed; the opening between the slot rails is ¾in. wide. The conductors carrying the electric current are **T**-shaped rails of soft steel with specially high conductivity, carried within a concrete conduit by insulated supports. According to a statement issued by the Council it appears that the inclusive cost may be put down at about £440,000, or about £26,800 per mile. The whole of the electrical installation of the tramways has been designed by and carried out under the general supervision of Dr. Kennedy. A portion of the electrical work, including the arrangement of the temporary generating station and sub-stations, as well as the laying of the electrical mains and their connection with the sub-stations, has been carried out by Mr. J. H. Rider, the Council's electrical engineer, under the supervision of Mr. A. Baker, the tramways manager, who has control of the working of the tramways and also advises the Council in all questions relative to tramways in London. The contractors for the road work, excavation and platelaying were Messrs. J. G. White & Co., of College Hill, Cannon Street, E.C.

New Companies.

Le Touquet Syndicate, Ltd., contractors, 30 and 31, St. Swithin's Lane, E.C. Capital: £50,000 in £1 shares.

Whyte & Co., Ltd., railway contractors, builders, &c., 1, Church Court, Clement's Lane, E.C. Capital: £10,000 in £1 shares.

Wood Lane Brick Co., Ltd., manufacturers of cement, terra-cotta bricks, tiles, pipes, &c. Capital: £3,000 in £10 shares.

Spiralitic Joint Co., Ltd., manufacturers of drain pipes, tiles, &c. Capital: £100 in £1 shares.

Whatley & Co., Ltd., auctioneers, estate agents, &c., surveyors, architects, &c. Capital: £10,000 in £1 shares

Millennium Light Syndicate, Ltd., makers of apparatus, &c., for intensifying the illuminating or heating properties of gas, gas manufacturers, &c., Milton House, Surrey Street, Thames Embankment, W.C. Capital: £200 in 1s. shares.

Vacant Appointments.

[The dates given are those on which the application is to be sent in, and the name given is that of the person to apply to. In nearly every case the application has to be made on a special form, which can be obtained from the officials mentioned.]

May 20.

Rugby U.D.C.—Superintendent for the laying of cables; state salary. Mr. Wratislaw, clerk.

May 21.

Chester R.D.C.—Clerk of works, £3 per week. W. Turncock, clerk.

May 22.

Hampton-on-Thames U.D.C.—Clerk of works, £3 3s. per week. Sidney H. Chambers, clerk.

May 23.

Wirral R.D.C.—Clerk of works, £3 per week. Frank E. Priest, 13, Harrington Street, Liverpool.

Walton-upon-Thames U.D.C.—Surveyor, salary £250. Percy H. Webb, clerk.

May 25.

Calcutta Corporation.—Engineer, salary Rs. 2,500, rising Rs. 3,000 per month. R. B. Buckley, Esq., C.S.I., 47, Clanricarde Gardens, London, W.C.

May 26.

Mirfield U.D.C.—Surveyor, £15[illegible]. E. B. Wilson, solicitor, Mirfield.

Tamworth Union.—Clerk of works at new infirmary; state wages. I. H. Dewes, clerk.

May 27.

Dawlish U.D.C.—Waterworks inspector, 30s. per week. R. C. Clarke, C.E.

June 2.

Gibraltar.—Civil engineer, £200, rising. W. W. Copland, engineer, Gibraltar.

Sanitary Commissioners of Gibraltar.—Assistant civil engineer, £120, rising. W. W. Copland, secretary, Sanitary Commissioners Offices, Gibraltar.

June 5.

Skegness.—Gas manager. £110. Tweek, Stephen & Dushper. solicitors, Skegness.

June 6.

West Ham Corporation.—Demonstrator and assistant lecturer in mechanical engineering, £120. Fred. E. Hillery, town clerk.

At once.

Blackpool Tramways Co.—Electrical foreman; state salary. Chairman, 30, Birley Street, Blackpool.

Glasgow Fire Salvage Corps.—Chief officer, £300, house, coals and gas. Chairman, Fire Offices Committee, 63, Watling Street, London, E.C.

Coming Events.

Wednesday, May 20.

Chemical Society.—Ordinary meeting at 5.30 p.m.

Thursday, May 21.

Glasgow Architectural Association.—Annual Excursion to Falkland Palace.

Society for the Encouragement of the Fine Arts.—Mr. Arthur Diosy, F.R.G.S., on "Our Allies in the Far East."

London Master Builders' Association.—Council Meeting at 4 p.m.

Society of Architects.—Mr. Silvanus Trevail, F.R.I.B.A., president, on "Impressions of Architectural Rambles on the Continent," 8 p.m.

Home Arts and Industries Association.—Exhibition at Royal Albert Hall at 2.30 to 7 p.m. Open until May 25th.

Saturday, May 23.

British Institute of Certified Carpenters.—Visit to the New Gaiety Theatre, Strand, W.C., at 3 p.m.

Society of Architects.—Field Day at Rochester under leadership of Mr. George Payne, F.S.A. Train leaves Victoria Station at 9.30 a.m.

Monday, May 25.

Surveyors' Institution.—Annual General Meeting. Election of officers and presentation of prizes, 2 p.m.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

Aberbeeg (Wales).—For the erection of twenty cottages at Aberbeeg, for the Aberbeeg No. 2 Building Club. Mr. G. C. Hillard, architect, Market Chambers, Abertillery:—

D. Lewis, Aberbeeg	£4,500
C. Sara, Cardiff	3,710
D. Powell,* Abertillery	3,680

* Accepted.

Acton, W.—For the erection of the Central Schools for the School Board for Acton. Messrs. Edward Monson & Sons, architects to the Board, Acton Vale, W., and 22, Buckingham Street, Adelphi, W.C. Quantities by F. T. W. Miller, of Dartmouth Street, Queen Anne's Gate, S.W.:—

Barker & Co., Kensington, W.	£31,500
B. E. Nightingale, Albert Embankment, S.E.	29,300
Hunt & Son, High Wycombe	28,967
Godson & Sons, Kilburn Lane, W.	28,846
Wall & Co., Kentish Town, N.W.	28,647
Kellett & Sons Willesden Junction, N.W.	28,100
Patman & Fotheringham, Theobalds Road, W.C.	28,000
Lole & Lightfoot, Chelsea, S.W.	27,957
Dorey & Co., Brentford, W.	27,300
Architects' Estimate	27,150
Braid, Pater & Co., Cheapside, E.C.	27,000
W. Wallis, Balham, S.W.	26,999
Dearing & Son, Halliford Street, W.	26,973
H. Lovatt, West Kensington, W.	26,750
T. Gough & Co., Hendon, N.W.	26,734
W. Blackburn, Chiswick, W.	26,650
W. J. Renshaw, Putney, S.W.	26,296
Galbraith Brothers, Camberwell Green, S.E.	26,295
Hadley & Sons, Old Hill, Staffs	26,000
Willcock & Co. Wolverhampton	25,685

* Accepted subject to the approval of the Board of Education.

Barry (Glamorganshire).—For the erection of a new branch reading-room at Porthkerry Road, Barry, Glam., for the Urban District Council. Messrs. Speir & Beavan, architects, Weston-super-Mare:—

A. Richards	£1,290
H. S. Rendall	1,208
Wooton & Son	1,160
H. Fisher	1,150
A. Hooper	1,145
Gibby & Cleak	1,140
S. Martyn*	1,035

* Accepted. [All of Barry.]

Beckenham, Kent.—Accepted for the erection of "Inglehurst" Messrs George Baines, F.R.I.B.A., and R. Palmer Baines, architects, 5, Clement's Inn, Strand, London, W.C.:—

Messrs. H. Copeland & Son, Beckenham	£1,726	10	6

Bowerham.—For the erection of an hotel at Bowerham, for Mr. William Mitchell. Messrs. Harrison, Hall & Moore, architects, &c., Church Street, Lancaster:—

Masons.			
W. Mashiter	£2,150	0	0
T. Kitchen	2,122	1	7
R. L. Dilworth	2,107	16	0
J. Thoms & Sons	1,966	18	4
R. Thompson	1,850	0	0
T. Mawson & Son	1,778	12	6
Exors. of W. Harrison*	1,768	0	0
Joiners.			
Wright & Sons	606	10	0
W. Knowles	584	0	0
W. Parkinson	569	17	6
W. Huntington & Sons	550	0	0
W. Richardson's Exors.	541	3	9
A. Vipond	530	0	0
J. H. Brear, Morecambe	491	16	7
Shaw & Son*	490	0	0
Slaters and plasterers.			
R. Hall & Son	£313	15	9
T. Cross & Sons*	299	5	0
J. Liver	232	11	11
Plumbers.			
Calvert & Heald	£350	0	0
J. B. Kitchen	349	1	2
J. Taylor	343	11	6
Harrison & Moser	341	17	4
W. Abbott	319	0	0
C. H. Whittle	318	0	0
H. P. Calvert	313	0	0
Rushton & Pinch	308	0	0
R. P. Wilson*	305	0	0
Painters.			
J. Taylor	£54	8	0
H. Warbrick	50	15	6
E. C. Parr*	49	15	11

* Accepted. [Rest of Lancaster.]

Bristol.—For builders' and plumbers' work connected with the enlargement of Chester Park Schools, Fishponds, for the Bristol School Board:—

Builder.		
G. Daltry	£4,991	
E. Walters	4,060	
S. Williams	3,905	
H. A. Forse	3,901	
J. E. B. James	3,760	
R. Wilkins & Sons	3,649	
A. J. Bloven	3,490	
E. Clarke	3,440	
E. Love	3,419	
C. A. Hayes	£3,387	
G. Humphreys	3,259	
J. Browning*	3,200	
Plumber.		
A. W. Hawley	£363	0
Slade & Bridgman	365	0
A. S. Scull	3 5	10
S. H. Pavey	319	0
J. E. B. James	319	0
A. E. Wilkins	318	0
G. F. Tuckey	309	0
J. Wilkins & Sons	305	0
A. & J. Tutcher*	302	10

* Accepted. [All of Bristol.]

Cardiff.—For the erection of new shop premises in Cowbridge Road, Canton, Cardiff, for Mr. Thomas Edwards, draper. Messrs. Veall & Sant, architects, Cardiff:—

G. Couzens & Co.	£1,300
F. Small	1,295
J. Allan	1,289
Melhuish Brothers	1,279
Tucker Brothers	1,276
S. Shepton & Son	1,275
J. Haines	1,250
W. T. Morgan	1,235
Blacker Brothers	1,230
W. Symonds & Co	1,200
A. W. Cadwallader	1,170
Knox & Wells*	1,123

* Accepted. [All of Cardiff.]

Clacton.—For the erection of new board schools in Holland Road:—

Dupont & Co.	£7,120	0
J. T. Ward, Colchester	7,100	0
H. Everett & Son, Colchester	7,000	0
S. F. Halliday, Stamford	6,967	10
H. W. Gladwell, Walton-on-Naze	6,875	7
Hammond & Son, Romford	6,813	0
H. Potter, Chelmsford	6,725	0
F. & E. Davey, Ltd., Southend	6,617	0
H. Smith, Clacton	6,565	0
E. West, Chelmsford	6,463	0
Ellis & Turner, Clacton	6,460	0
Myall & Upson, Clacton	6,400	0
J. McKay*	6,300	0

* Accepted.

Corsham (Wilts).—For the erection of new Wesleyan Church and heating chamber. Plans and quantities by Mr. W. H. Bromley, surveyor, Corsham:—

J. Smith	£1,911	0	0
J. Carter	1,865	0	0
Muritt & Son	1,805	0	0
Bigwood & Co.	1,605	0	0
E. Linzey	1,577	16	6
G. Moore,* Trowbridge	1,504	9	0
[Heating apparatus.]			
Haden & Sons, Trowbridge	38	15	0

* Accepted.

Hampton (Middlesex).—For the erection of isolation hospital, Uxbridge Road, Hampton Hill, for the Urban District Council. Mr. S. H. Chambers, senior, architect, Public Offices, Hampton:—

J. Casse	£4,124
Spiers & Sons	3,700
Barker & Co., Ltd.	3,389
E. Chamberlain,* Addlestone, Surrey	3,3 6

* Accepted.

London, S.W.—For electric lighting and bells for the new Chelsea Dispensary, Manor Street, S.W. Messrs. Sheppard & Burkinshaw, architects:—

Messrs. Wells	£53	10	0
Lewin & Co.	52	12	0
Mr. W. Seymour	49	17	6
Messrs. Taylor	46	10	11

* Accepted.

London, W.—For re-building 91, Great Titchfield Street, W., for Mr. H. J. Bale. Mr. William Pywell, A.R.I.B.A., architect, Cumberland House, Hanwell. Quantities by Mr. Max Clarke:—

R. D. Lown & Son	£3,773
E. Lawrance & Sons	3,486
J. Carmichael	3,400
W. G. Minter	3,357
T. H. Kingerlee & Sons	3,227
W. Whitehead	3,065
B. E. Nightingale	3,025
Walter Wallis*	2,999

* Accepted.

London, S E.—For the erection of public baths and washhouses, Old Kent Road, for the Borough of Camberwell. Mr. E. Harding Payne, A.R.I.B.A., architect, 11, John Street, Bedford Row, W.C. Quantities by Mr. R. C. Gleed:—

	Baths and Wash-houses.	Extra for Portland stone.
W. Lawrence & Son, Waltham Cross	£48,300	£2,800
Balaam Brothers, Camberwell	45,000	1,100
B. Nightingale, Lambeth	44,500	2,200
Shelbourne & Co., E.C.	42, 10	1,723
G. Godson & Sons, Kilburn Lane	42,354	7 6
W. J. Maddison, Canning Town	42,329	1,256
J. Shillitoe & Son, Bury St. Edmunds	42,270	970
E. Lawrence & Son	41,975	998
Battley, Sons & Holness, Camberwell	41,757	1,119
C. Ansell, Lambeth	41,500	999
R. Jones & Son, Sutton	41,035	—
H. L. Holloway, Deptford	41,000	955
Holloway & Greenwood, Brixton	40,644	1,032
W. Pattinson & Sons, Westminster	40,133	1,068
J. Greenwood, Ltd., E.C.	40,086	1,000
W. Wallis, Balham	39,999	1,500
W. King & Son, Vauxhall	39,792	1,266
Galbraith Brothers, Camberwell	£39,675	£1,426
Kilby & Gayford, E.C.	39,633	1 2 0
A. N. Coles,* Plymouth	37,433	1,630

* Provisionally accepted.

Lower Gornal (near Dudley).—For alterations and extensions to Red Hall Schools, Lower Gornal, for the Sedgley School Board. Mr. A. Ramsell, architect, Dudley:—

J. A. Meredith	£5,799
Speke & Son	5,770
C. Griffiths	5,746
Hilton & Caswell	5,710
M. Round	5,690
F. L. Jones	5,640
J. Herbert	5,6 0
J. Dallow	5,490
Oakley & Coulson	5,116
Gough & Son,* Wolverhampton	4,900

* Accepted.

Lower Gornal (near Dudley).—For extensions to Robert Street Infants' School, Lower Gornal, for the Sedgley School Board. Mr. A. Ramsell, architect, Dudley:—

J. Herbert	£1,586	0	0
Hilton & Caswell	1,495	0	0
J. A. Meredith	1,457	0	0
Speke & Son	1,443	12	6
Gough & Son	1,420	0	0
C. Griffiths	1,400	0	0
Jakeman & Round	1,386	0	0
E. Seckerson	1,376	0	0
Guest & Sons	1,350	0	0
J. Dallow	1,335	0	0
Oakley & Coulson * Dudley	1,299	0	0

* Accepted.

Lowestoft.—For the erection of Lorne Park Road, W. School Chapel, Kirkley. Mr. G. E. Smith, architect, 145 Victoria Road North, Southsea:—

General Builders, Ltd.	£3,468	0	0
F. M. Ashly	3,293	0	0
G. Riches	3,250	0	0
H. C. Lofts	3,037	11	1
C. E. Earl	3,033	0	0
Granding & Sewell	3,016	17	5
T. W. Brady	2,997	15	0
Seago & Crisp	2,947	16	4
R. C. Loder	2,911	0	0
G. E. Hawes	2,900	0	0
C. R. Cole	2,878	0	0
G. Elsey	2,750	0	0
Bedwell & Parker	2,660	10	0
Brady & Son	2,649	9	6
J. Gane	2,633	6	0
J. J. Howes	2,557	0	0
Smith & Wolfe	2,345	10	8
Smith & Wolfe*	2,000	0	0

* Reduced and accepted.

Mortlake.—For erecting twelve houses. Mr. William H. Burt, architect, 10, Bush Lane, Cannon Street, E.C. Quantities by Mr. Thomas Brown, 4 and 5, Warwick Court, Gray's Inn, W.C.:—

Houghton & Co.	£9,052	6
Adamson & Sons	9,035	0
E. Seaber	7,696	10
E. Spicer	7,317	17
J. A. Stayner	7,105	19
Pickering & Besant	6,814	0

Newport (Salop).—For eight semi-detached villas, Newport, Salop, for Mr. J. C. Brown, Shakespeare Hotel, Newport. Mr. M. Morley, F.I.A.S., architect, Wellington:—

Treasure & Son, Shrewsbury	£2,998	0	0
T. Healey, Market Drayton	2,766	2	0
Waugh & Son, Ilkley	2,750	0	0
A. Roper, Wellington, Salop	2,700	0	0
G. I. Muirhead,* Newport, Salop	2,5 7	17	5
Stretton & Gibson, Cheshire	2,592	5	7
W. Skelthorne, Stafford	2,531	0	0

* Accepted.

Newport (Salop).—For ten houses, for the Fountain of Peace Lodge, Newport, Salop. Mr. M. Morley, F.I.A.S., architect, Wellington, Salop:—

Treasure & Son, Shrewsbury	£2,850	0	0
T. Healey, Market Drayton	2,539	16	11
A. Roper, Wellington, Salop	2,520	0	0
Whittingham, Newport Salop	2,400	0	0
Stretton & Gibson, Cheshire	2,303	13	0
W. Skelthorne, Stafford	2,231	0	0
G. I. Muirhead,* Newport, Salop	2,195	11	4
Waugh & Son, Ilkley, Yorks	1,820	0	0

* Accepted.

Quarry Bank (near Brierley Hill).—For new Primitive Methodist Church, Quarry Bank, for the Trustees Mr. A. Ramsell, architect, Dudley:—

Jakeman & Round	£2,9 6	2	6
J. A. Meredith	2,894	0	0
M. Round	2,880	0	0
Oakley & Coulson	2,878	0	0
C. A. Horton	2,810	0	0
Guest & Son	2,795	0	0
Brooks & Tandy,* Quarry Bank	2,755	0	0
J. Dallow	2,750	0	0

* Accepted.

Winchester.—For the construction of stoneware pipe sewers, including manholes, flushing tanks and other works for sewering certain streets in the added area, for the Corporation. Mr. W. V. Anderson, A.M.I.C.E., city engineer:—

F. W. Trim, Eastleigh	£6,911
Douglas & Richards, Southampton	6,499
B. Cooke & Co., London	5,528
Grounds & Newton, Bournemouth	5,285
Streeters & Todhunter, Godalming	5,194
F. Osman, Southampton	5,140
A. G. Osenton, Tilehurst	5,071
Coston & Co.,* Ltd., Southampton	4,650

* Accepted.

Complete List of Contracts Open.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
		BUILDING:		
May	21	Caerphilly, Wales—House and Shop	—	R. Williams, Draper, Taff's Well.
"	21	Darlington—School	School Board	G. G. Hoskins, Architect, Court Chambers, Darlington.
"	21	Elgin, Scotland—Farm Steading, Cottage, &c.	—	A. & W. Reid & Wittet Architects, Elgin.
"	21	Witton-le-Wear, Durham—Sunday School	Wesleyan Methodist Society	F. H. Livesay 107 Newgate Street, Bishop Auckland.
"	21	Conway—Lavatories Fire Staircase, &c.	Guardians	T. B. Farrington, Architect, Trinity Square, Llandudno.
"	21	Woolwich—Public Library	Borough Council	F. Sumner, Borough Engineer, Maxey Road, Plumstead.
"	21	Wyke, Yorks—Seven Houses	—	R. Berry Architect, Commercial Street, Halifax.
"	22	Hull—Superstructure of Buildings	Property Committee	J. H. Hirst, City Architect, Town Hall, Hull.
"	22	Walney Island, Barrow in Furness—Chapel	—	J. F. Curwen, 26 Highgate, Kendal.
"	22	London, W.—Alterations to Town Hall	St. Marylebone Borough Council	J. P. Waddington, Engineer, Town Hall, Marylebone Lane, W.
"	22	Bramley Leeds—Woollen Manufactory	—	J. Kirk & Sons, Architects, Huddersfield.
"	22	Manchester—Pulling down Twenty-two Cottages	Workhouse Committee	A. J. Murgatroyd, 23 Strutt Street Manchester.
"	22	Oakenshaw, near Bradford—Shop, House, &c.	—	M. Hall, 1 Harrison Road Halifax.
"	22	Penymynydd Wales—Farmhouse	H. Howells	H. Howells, Penymynydd, Pyle.
"	22	St. George-in-the East—Repairs to Infirmary	Guardians	R. J. Tasker, 38 John Street, Bedford Row, W C.
"	23	Munlochy—Dwelling-House	—	D. Matheson, Architect, Tore.
"	23	Bradford—Shop and House	—	S. Spencer, Architect, Old Bank Chbrs., Great Horton, Bradford
"	23	Dufftown, Scotland—Hospital	—	C. C. Doig, Architect, Elgin
"	23	Lanchester—House, &c	W. Smith	T. E. Taylor, Architect, Prospect House, Lanchester.
"	23	Pontardawe—Extensions, &c., to Chapel	—	C. S. Thomas, 63 Wind Street, Swansea
"	23	Pontypridd—Three Houses	R. Phillips	Lewis & Morgan, Architects, Pontypridd.
"	23	Wardhouse, Aberdeen—Additions to Farm Offices	—	Farm Offices Bridgefoot Wardhouse Aberdeen.
"	23	Tewkesbury—Bricks, Cement &c.	Rural District Council	A. W. Shorlands, Surveyor, Church Street, Tewkesbury.
"	24	London, S.W.—Enlarging of Victoria Station	L. B. & S. C. Railway	Engineer, London Bridge Station, S.E.
"	25	Barrow-in-Furness—Fittings, &c., to School	Corporation	Town Clerk, Barrow-in-Furness.
"	25	Bedwas Wales—Villa, Ten Houses, Shop	G. G. Lewis	G. L. Watkins, Architect, Station Terrace, Caerphilly.
"	25	Caerphilly, Wales—Forty-two Houses	Victoria Building Club	G. L. Watkins, Architect, Station Terrace, Caerphilly.
"	25	Edinburgh—Additions to Cottages	Water Trustees	E. C. Carse, 38 Leithwalk, Edinburgh.
"	25	Leeds—Pressed and common Red Bricks	Corporation	R. H. Townsley, Manager, Gas Offices, Leeds.
"	25	Ramsgate—Superstructure of Pavilion, &c.	Corporation	E. B. Sharpley Town Clerk, Albion House, Ramsgate.
"	25	Cardiff—Alterations to Premises	—	S. Rooney, 9 Quay Street, Cardiff
"	25	Patricroft—Additions to Electricity Station	Eccles Corporation	N. H. Hacking, 50 Blackfriars Street Manchester.
"	26	London, N.—Fourteen Rows of Cottage Dwellings	London County Council	Housing Section, Architect's Dprtmnt., 19 Charing Cross Rd., W.C.
"	26	Tilbury Docks, Essex—School and House	Chadwell St. Mary School Board	J. Thompson, 12 St. Vincent's Road Southend-on-Sea.
"	26	Hendon—Newspaper Repository	Commnrs of H.M. Works, &c.	Secretary, H.M. Office of Works, &c., Storey's Gate, S.W.
"	26	Knightsbridge—Post Office	Commnrs. of H.M. Works, &c.	Secretary H.M. Office of Works, &c., Storey's Gate, S.W.
"	26	Portland—Station	Great Western Railway Co.	Engineer, Paddington Station.
"	26	Enniskillen—Alterations to Three Residences	J. W. Dane	W. Scott, 2 Willoughby Place, Enniskillen.
"	27	Magherafelt, Ireland—Building Work	Board of Rainey School	J. J. Phillips & Son, 61 Royal Avenue, Belfast.
"	27	Milnthorpe Chapel and Schools	—	J. F. Curwen, 26 Highgate, Kendal.
"	27	Northgate, Canterbury—Additions, &c., to House	School Board	W. J. Jennings, 4 St. Margaret Street, Canterbury.
"	30	Petty—Renovation of Church	—	J. Robertson, Architect, 50 Union Street, Inverness.
"	30	Chandler's Ford, Hants—Church	—	H. T. Northcroft, Son & Nicholson, 9 Regent Street, London.
"	30	Wickham Market, Suffolk—Restoration of Spire	—	J. S. Corder, Wimborne House, Ipswich.
June	1	Limerick—Fifteen Cottages	Thomond Artizans' Co., Ltd.	J. F. Power, Secretary, Carr Street, Limerick.
"	1	Macclesfield Laundry, &c.	Guardians	Whittaker & Bradburn, 19 King Edward Street, Macclesfield.
"	2	Cleethorpes—Council Offices	Urban District Council	H. C. Scaping, Architect, Court Chambers, Grimsby.
"	2	Hanwell W.—Sorting Office	Commnrs. of H.M. Works, &c.	J. Wager, H.M. Office of Works, &c., Storey's Gate, S.W.
"	2	Finchley, N.—Sorting Office	Commnrs. of H.M Works, &c.	J. Wager, H.M. Office of Works, &c., Storey's Gate, S.W.
"	3	Gosforth, Ponteland—Station Buildings, &c.	North-Eastern Railway Co.	W. Bell, Architect, Central Station, Newcastle-on-Tyne.
"	8	Ystradyfodwg—Additions to Masters' House, &c.	School Board	J. Rees, Hillside Cottage, Pentre.
"	8	Ystradyfodwg—Additions to School	School Board	J. Rees, Hillside Cottage, Pentre.
"	8	Hornsey—Workmen's Dwellings	Urban District Council	E. J. Lovegrove, 99 Southwood Lane, Highgate, N.
"	23	Clapham, S.W.—Portion of Car Sheds	—	Architect's Department (Highways Section), 19 Charing Cross Road, W.C.
"	24	Whitchurch, near Cardiff—Superstructure of Asylum	Cardiff Corporation	Oatley & Skinner, Architects, Edinburgh Chambers, Baldwin Street, Bristol.
		ENGINEERING.		
May	21	Ware, Herts—Pumps, Gas Engine, &c.	Urban District Council	J. E. Smales, Surveyor, New Road, Ware.
"	21	Newcastle-on-Tyne—Bridge Works	—	City Engineer, Town Hall, Newcastle-on-Tyne.
"	22	Warrington—Hydraulic Mains, &c.	Gas Committee	W. S. Haddock, Gas Engineer, Gas Works, Warrington.
"	22	Cleckheaton, Yorks—Electric Lighting	—	J. Hartley, Booth Street, Cleckheaton.
"	23	Eccles, Lancs—Crane	Corporation	H. W. Angus, Borough Electrical Engineer, Cawdor Stree Patricroft.
"	25	Ilford—Machinery, &c.	Urban District Council	G. R. Spurr, Manager, Tramway Depôt, Ley Street, Ilford.
"	26	Warrington—Electric Motor	Sanitary Works Committee	J. Deas, Water Engineer, Bank House, Warrington.
"	26	Dublin—Tug Steamer	Port and Docks Board	J. P. Griffith, Board's Engineer, East Wall, Dublin.
"	28	Lymington—Water Fittings, &c.	Corporation	J. D. Rawlins, 38 High Street, Lymington.
"	29	Manchester—Lock Gates	Ship Canal Co.	W. H. Hunter, 41 Spring Gardens, Manchester.
"	30	Foots Cray, Kent—Electric Lighting	Urban District Council	A. E. Leonard, Clerk, Council Offices, Sidcup, Kent.
	30	Northfield and King's Norton—Widening of Bridges, &c.	Highway and Bridges Committee	J. H. Garrett, County Road Surveyor, Shirehall, Worcester.
June	1	Beckenham—Steam Fire-engine	Urban District Council	F. Stevens, Clerk, Beckenham.
"	2	Oldham—Coal-Measuring Boxes, &c.	Electricity Committee	A. Andrew, Gas and Water Offices, Oldham.
"	4	Matlock Bridge—Widening Bridge	Derbyshire County Council	J. S. Story, County Surveyor, County Offices, Derby.
"	5	Bridgend, Wales—Waterworks	Penybont R.D.C.	J. & F. J. Hurley, 10 Bridgend Road, Aberkenfig.
"	8	Brighton—Electrical Plant	Town Council	A. Wright, Star Chambers 30 Moorgate Street, E C.
"	12	Berwyn, near Llangollen—Bridges and Roadways	—	E. Foulkes-Jones, Secretary, King's Bridge Committee, Llangollen.
"	15	Ghiza—Electric Power Supply	—	Commercial Intelligence Branch, B. of T., 50 Parliament St., S.W
July	1	Rangoon—Electric Supply Undertaking	Municipal Committee	Ogilvy, Gillanders & Co., 67 Cornhill, E.C.
"	1	Penybont, Wales—Sewerage Works	Rural District Council	Burnett & Hurley, 10 Bridgend Rd., Tondu, Aberkenfig, Glamorgan

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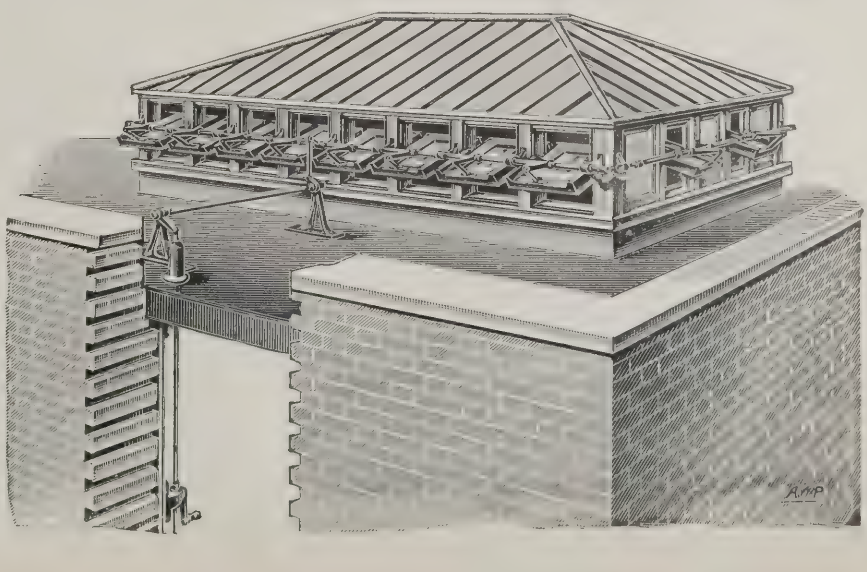

Complete List of Contracts Open *—continued.*

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
		IRON AND STEEL:		
May	21	London, E.C.—Railway Stores	Burma Railways Co., Ltd.	Secretary, 76 Gresham House, Old Broad Street, E.C.
,,	21	London, S.E.—Iron Railings &c.,	Guardians	Newman & Newman, 31 Tooley Street, S.E.
,,	22	Warrington—Joists and Rails, &c.	Gas Committee	W. S. Haddock, Gas Engineer, Gas Works, Warrington.
,,	22	Spilsby—Tools	Rural District Council	T. A. Busbridge, District Surveyor, Spilsby.
,,	23	Tewkesbury—Casting, Pipes, &c.	Rural District Council	A. W. Shorlands, Surveyor, Church Street, Tewkesbury.
,,	25	Leeds—Wrought-iron Tubes, &c.	Corporation	R. P. Townsley, Manager, Gas Offices, Leeds.
,,	26	Edinburgh—Thirty Wrought-iron, &c., Screens	Water Trustees	W. A. Tate, 72A George Street, Edinburgh.
,,	27	Barnsley—Fencing, Gates &c.	Water Committee	J. H. Taylor, Waterworks Manager, Manor House, Barnsley.
,,	27	Warrington—Four Verandahs, Fire Escape Staircases, &c.	Health Committee	Borough Surveyor, Town Hall, Warrington.
,,	27	North Walsham—Pipes	Urban District Council	J. S. Empson, Clerk, Council Offices, North Walsham.
,,	28	Kirkby Lonsdale—Purifiers	Gas Co.	J. Greenbank, Secretary, Gas Offices, Kirkby Lonsdale.
,,	29	Lancaster—Window Guards	——	Clerk of the Works, County Lunatic Asylum, Lancaster.
,,	30	Llandudno—Pipes, &c.	Urban District Council	E. P. Stephenson, Town Hall, Llandudno.
,,	30	Walsall—Iron Tubes and Fittings, &c.	Corporation	Gas Office, Bridge Street, Walsall.
June	1	Queenstown, Ireland—Pipes, &c.	Urban District Council	J. H. Campbell, Town Clerk, Town Hall, Queenstown.
,,	5	Bridgend, Wales—Cast-Iron Pipes	Penybont Rural District Council	J. & F. J. Hurley 10 Bridgend Road, Aberkenfig.
,,	8	Johannesburg—Rails, &c.	Municipality	Mordey & Dawbarn, 82 Victoria Street, London, S.W.
,,	15	Bangkok, Siam—Permanent-way Materials	Royal Siamese State Railways	Director-General, Gehots, Bangkok.
,,	15	Bangkok, Siam—Railway Stores	Royal Siamese State Railways	Siamese Legation, London.
		PAINTING AND PLUMBING:		
May	21	Ashford, Middlesex—External Painting	West London School District Managers.	Superintendent, Schools, Ashford.
,,	22	Cleckheaton—Painting and Decorating Chapel	——	Curator, Providence Place, Congregational Chapel, Cleckheaton.
,,	22	Upton Park, E.—Re-decorations	St. George's in the East Guardians	R. J. Tasker, 38 John Street, Bedford Row, W.C.
,,	25	Aspatria, Cumberland—Painting, &c.	——	J. H. Martindale, Architect, Viaduct Chambers, Carlisle.
,,	25	Hove, Sussex—Painting	——	H. H. Scott, Borough Surveyor, Town Hall, Hove.
,,	25	Belfast—Plumbing, &c.	Corporation	Sir S. Black, Town Clerk, Belfast.
,,	30	Walsall—Brushes, Oils, Lead Piping, &c.	Corporation	Gas Office, Bridge Street, Walsall.
,,	30	Willenhall, Staffs—Painting, &c.	Urban District Council	T. E. Fellows, Engineer, Town Hall, Willenhall.
,,	30	Llandudno—Lead and Lead Piping, &c.	Urban District Council	E. P. Stephenson, Town Hall, Llandudno.
June	2	London, W.—Painting, &c., at Infirmary	Paddington Guardians	E. H. Line, 8 Craig's Court, Charing Cross, W.C.
		ROADS AND CARTAGE:		
May	21	Croydon—Making-up	Rural District Council	E. J. Gowen, Clerk. Town Hall, Croydon.
,,	21	Ware, Herts—Road Improvement Works	Urban District Council	J. E. Smales, Surveyor, New Road, Ware.
,,	23	Romsey—Steam Rolling	Rural District Council	J. J. White, District Surveyor, Winchester Road, Romsey.
,,	23	Wilmslow—Materials	Urban District Council	A. S. Cartwright, Surveyor to Council, Council Offices, Wilmslow.
,,	25	Leeds—Flags	Corporation	R. H. Townsley, Manager, Gas Offices. Leeds.
,,	25	Altofts, near Wakefield—Footpaths, &c.	Urban District Council	J. C. Coates, Council's Surveyor, 26 Wood Street, Wakefield.
,,	25	Belfast—Setts	Harbour Commissioners	G. F. L. Giles, Engineer, Harbour Office. Belfast.
,,	25	Wickham Market, Suffolk—Materials	Plomesgate R.D.C.	T. W. Read. Clerk, Board Room. Wickham Market.
,,	26	Brixham, Devon—Street Improvement Works	Urban District Council	J. L. Arlidge, Clerk, Town Hall, Brixham.
,,	26	Cheriton, Kent—Road Works	Urban District Council	Surveyor, Public Offices, Cheriton, Kent.
,,	26	Failsworth, Lancs—Street Works	Urban District Council	Surveyor, Town Hall, Failsworth.
,,	26	Dartford—Making-up, &c.	Urban District Council	W. Harston, 8 Hythe Street, Dartford.
,,	26	West Ham—Making-up Streets	Borough Council	J. G. Morley, Borough Engineer, Town Hall, West Ham, E.
,,	28	Chatham—Granite, Flints, &c.	Corporation	C. Day, Borough Surveyor, Town Hall, Chatham.
,,	28	Braintree—Granite	Urban District Council	H. H. Nankivell, Surveyor, Vestry Hall, Braintree.
,,	29	West Didsbury, Lancs—Tar Macadamising	Urban District Council	A. H. Mountain, Surveyor, Town Hall, West Didsbury.
,,	30	Llandudno—Setts and Macadam, &c.	Urban District Council	E. P. Stephenson, Town Hall Llandudno
June	12	Berwyn, near Llangollen—Roadways	——	E. Foulkes-Jones Secretary, King's Bridge Committee, Llangollen.
		SANITARY:		
May	21	Birkenhead—Lime	Corporation	A. Gill, Town Clerk, Town Hall Birkenhead.
,,	23	Upper Norwood, S.E.—Sewers, &c.	——	W. B. Hill, 81 Above Bar, Southampton.
,,	23	Iver, Bucks—Soakaways	School Board	W. Garner, junr. 159. High Street, Uxbridge.
,,	23	Surbiton—Sewers, &c.	Urban District Council	Council Offices Ewell Road, Surbiton.
,,	23	Tewkesbury—Stoneware Pipes, &c.	Rural District Council	A. W. Shorlands, Surveyor, Church Street, Tewkesbury.
,,	25	Leeds—Lime	Gas Committee	R. H. Townsley, Manager, Gas Offices, Leeds.
,,	25	Campbeltown, Scotland—Drainage Works	Town Council	Master of Works, Campbeltown.
,,	25	Stanley, Durham—Sewer	Urban District Council	J. Routledge, Surveyor, Council Offices, Stanley.
,,	25	Islington—Stoneware Pipe Sewers	——	J. P. Barber, Borough Engineer, Town Hall, Upper Street, N.
,,	27	New Whittington—Alterations to Drains	County Council	County Surveyor, County Offices, Derby.
,,	27	Andover—Sewerage	Town Council	Borough Surveyor, 40 High Street, Andover.
,,	27	Leicester—Sewers, &c.	Sewage Works & Farms Committee.	E. G. Mawbey, Borough Engineer, Town Hall, Leicester.
,,	30	Walsall—Lime	Corporation	J. R. Cooper. Town Clerk, Borough Offices, Walsall.
,,	30	Llandudno—Sewer Pipes, &c.	Urban District Council	E. P. Stephenson, Town Hall, Llandudno.
June	2	Formby, Lancs—Sewerage and Sewage-Disposal Works	Rural District Council	C. A. Atkinson, 11 Tithebarn Street. Liverpool.
,,	10	Chelmsford—Sewers	Town Council	G. A. Lasse, 16 London Road, Chelmsford.
		TIMBER:		
May	25	Wokingham—Timber	Guardians	J. F. Sargeant Clerk, Union Offices, Wokingham.

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June	2	Abergavenny—Library (ltd. to Local Architects)	£20.	——	E. H. Restall, Librarian, Town Hall, Abergavenny.
,,	18	Limerick—Library and Museum	£75, £25.	——	W. M. Nolan, Town Clerk, Town Hall, Limerick.
,,	23	Poplar, E.—Public Library	£75.	——	Borough Surveyor, Council Offices, High Street, Poplar, E.

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Hay, best	do.	3	15	0	5	10	0
Sainfoin mixture ..	do.	3	15	0	4	5	0
Straw	do.	1	8	0	1	18	0

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Colza Oil, English ..	do.	1	4	0		—	
Copperas	per ton	2	2	6		—	
Lard Oil	per cwt.	2	15	0	2	17	0
Lead white, ground, carbonate	do.	1	4	10	—		
Do. red	do.	1	0	4¼			
Linseed Oil, barrels ..	do.	1	4	1½		—	
Petroleum, American ..	per gal.	0	0	5½	0	0	5⅝
Do. Russian .	do.	0	0	4	0	0	4⅛
Pitch	per barrel	0	8	0		—	
Shellac, orange	per cwt.	6	0	1		—	
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Home Melt ..	per cwt.	1	8	6	1	9	0
Tar, Stockholm	per barrel	1	1	6		—	
Turpentine	per cwt.	2	2	7½		—	

METALS.

		£	s.	d.	£	s.	d.
Copper, sheet, strong ..	per ton	75	0	0		—	
Iron, Staffs., bar	do.	6	5	0	8	10	0
Do. Galvanised Corrugated sheet ..	do.	11	7	6	11	10	0
Lead, pig, Soft Foreign ..	do.	11	17	6		—	
Do. do. English common brands ..	do.	12	2	6		—	
Do. sheet, English 3lb. per sq. ft and upwards ..	per ton	14	10	0		—	
Do. pipe	do.	15	0	0		—	
Nails, cut clasp, 3in to 6in.	do.	9	5	0		—	
Do. floor brads ..	do.	9	0	0		—	
Steel, Staffs., Girders and Angles	do.	5	15	0	6	7	6
Do. do. Mild bars ..	do.	6	12	6	7	2	6
Tin, Foreign	do.	135	0	0	135	10	0
Do. English ingots ..	do.	136	10	0	137	0	0
Zinc, sheets, Silesian ..	do	26	0	0		-	
Do. do. Vieille Montaigne	do.	26	5	0		—	
Do. Spelter	do.	21	0	0	21	2	6

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Do. Pitch	do.	3	0	0	3	4	0
Laths, log, Dantzic ..	per fath.	4	10	0	5	10	0
Do. Petersburg ..	do.	7	5	0		—	
Deals, Luleå, 1st Yellow, 3×9	do.	11	15	0		—	
Do. do. do. 2½×7	do.	9	0	0		—	
Do. Blankaholm, 1st White, 3×11	do.	11	7	6		—	
Do. do. do. 3×9	do.	10	0	0		—	
Do. Mesane, Yellow,— 2nd, 3×11	do	16	10	0		—	
3rd, 3×9	do.	13	0	0		—	
Do. Nederkalix, Yellow, 3rd, 3×9	do	8	7	6		—	
Do. Riga 2nd White 3×9	do.	9	0	0		—	
Do. Norrköping, Yellow, unsorted, 4×11	do.	10	0	0		—	
Do. do. do. 4×9	do.	9	10	0		—	
Do. do. do. 3×8	do.	8	0	0		—	
Do. do. do. 2½×7	do.	9	0	0		—	
Do. do. do. 2½×9	do	9	15	0		—	
Deals, Dalhousie, White Spruce,— 1st, 2nd, and 3rd, 3×10 ..	per fath.	8	5	0		—	
Do. 3×9×14ft.	do.	9	5	0		—	
Do. Gander Bay, Yellow Pine, 3rd, 3×13 ..	do.	8	10	0		—	
Do. Holmsund, Yell. Pine, 4th, 3×9	do.	10	10	0		—	
Do. Quebec Red Pine, unsorted 3×11	do.	8	10	0		—	
Do. do. do. 3×8	do.	8	0	0		—	
Do. do. do. 3×7	do.	8	0	0	8	5	0
Do. do. Yellow Pine, 1st, 3×12 to 23ft. by 3ft.	do.	17	10	0		—	
Do. do. 4th, 3×9 ..	do.	10	5	0		—	
Do. do. White Spruce, 2nd 3×9×16ft.	do.	10	5	0		—	
Do. do. 3rd, 3×7 ..	do.	7	15	0	8	0	0
Battens, all kinds ..	do.	6	10	0	12	0	0
Flooring Boards 1in. prepared, 1st	per square	0	8	9	0	13	0
Do. 2nd	do.	0	8	9	0	10	0
Do. 3rd &c.	do.	0	7	0	0	9	6

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver.]

During the week ending May 16th eleven failures in the building and timber trades in England and Wales were gazetted.

R. Clark, builder, Meopham. R.O. April 11th.

H. C. Nunn, builder, Cherryhinton. R.O. May 9th.

G. Brown, builder, Leicester. Unsecured liabilities £4,029; assets £2,300.

S. Cooper, builder Kingston-on-Thames. Gross liabilities £5,788; £718 to rank for dividend; deficiency £564.

B. L. Evans, builder and contractor, Ebbw Vale. R.O. May 9th.

M. Nicholson, painter and paperhanger, Walker. R.O. May 9th.

A. Whitehouse, contractor and haulier, West Bromwich. R.O. May 5th.

C. Stotter, brickmaker, Enfield. Liabilities £2,338; assets £1,470.

A. E. Tuckel, carman and contractor, Battersea. R.O May 6th.

C. Williams, contractor and builder. Swindon. R.O. May 5th.

Heatherley Brothers, contractors, Milford Haven. P.E., Pembroke Dock Temperance Hall. June 5th, at 12.

A. D. Mitchell, builder, Derby. Gross liabilities £5,599; £1,439 to rank for dividend; assets £1,120; deficiency £319

F. Merredew, joiner, Kingston-on-Thames. Gross liabilities £7,647; £2,155 to rank for dividend; deficiency £298.

Gill & West, contractors, Southend-on-Sea. First meeting, The Institute, Clarence Road, Southend-on-Sea, May 20th, at 12.30. P.E., Shirehall, Chelmsford, June 3rd, at 10.

E. Foster, late painter and decorator, Barton-on-Humber. R.O. May 4th. First meeting, O.R.'s, Great Grimsby, May 20th, at 11. P.E., Great Grimsby Town Hall, June 4th, at 11.

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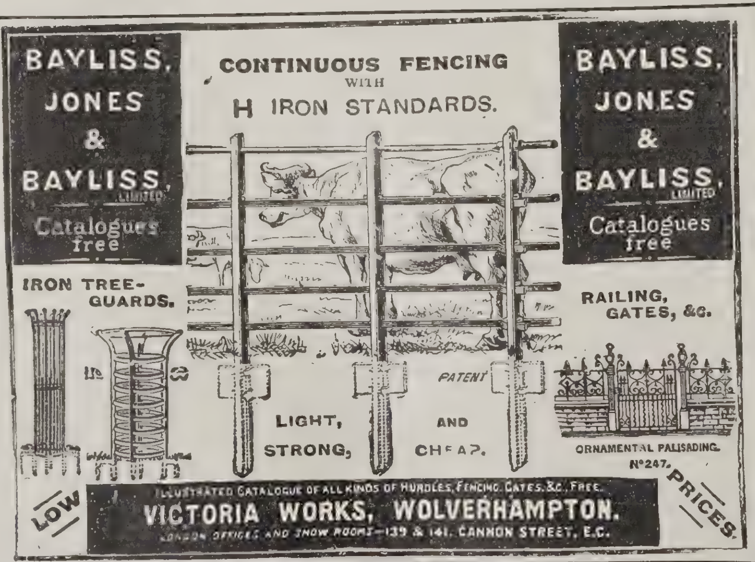
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AND ARCHITECTURAL RECORD.

May 27, 1903. Vol. 17, No. 433. 9, East Harding Street, E.C.

Some Opinions about Liverpool Cathedral. OUTSIDE opinions on architectural matters are often interesting, sometimes valuable. The following, expressing three totally different aspects of the Liverpool Cathedral question, will be read with considerable interest. "Truth" says:—Architects of position are not likely to trouble themselves further with the work of a Committee of dunderhead amateurs which proceeds in so eccentric and skimble-skamble a fashion. The building of Liverpool Cathedral is, *a priori*, a hideous waste of money, and the egregious Committee need not be so feverishly anxious to provide for a large congregation, considering the notorious fact that not a church in the city is ever more than half full, and most of them are nearly empty at all the services. "The Globe" says:—The result of the competition . . is, to say the least, extremely disappointing. . . Liverpool is, therefore, as far as ever from obtaining a cathedral which will do it credit; and if the purely utilitarian ideas of the Committee are to determine the character of the building which will ultimately be erected, there seems little hope of escaping an artistic disaster. "The Tablet" says:—This very suggestion that the pulpit is the most important feature of a cathedral reminds us that Liverpool retains its reputation as a city of stalwart Protestantism. When we go on to add that Mr. Giles Gilbert Scott is a Catholic, perhaps a further clue may be supplied as to the attitude of some of the people of Liverpool towards his design . . . When Mr. Coventry Patmore built the Church of Our Lady Star of the Sea at Hastings he employed a Protestant architect of great repute, Mr. Basil Champneys; and Liverpool may be further reminded of a local instance of Catholic tolerance—the entrusting of the erection of a Catholic church at Lancaster to a Protestant, Mr. Paley. One thing is obvious. If a Catholic is to be debarred from employment in the building of a Protestant cathedral, the invitation to competitors should notify this restriction. It should be frankly stated at the outset that no Catholics need apply.—Mr. W. E. Willink, the well-known Liverpool architect, says:—No one, I think, ventures to deny that this design (Mr. Scott's) is one which shows very exceptional skill and originality; above all, a dignity and largeness of purpose suited to such a monumental work as we desire to possess. But the chief point to remember is not the intrinsic merit of the design, but that in a competition open to the whole world one competitor has been placed by assessors, whose weight no one can be bold enough to deny, far above all the rest, and that this man is entitled in all fairness to reap the reward for which he was encouraged to work. The reason given for the rejection of the design appears, if I may say so with great respect, to be inadequate. In the first place, competitors were not instructed to provide a building in which 3,000 people could hear, but one in which they could see the preacher; and this is, without dispute, accomplished. In the second place, the range of a preacher's voice, if hearing be taken as the criterion, can only be ascertained in a completed building, and it might well happen that all who could see could also hear. . . .

Whitewashing. MR. ARTHUR SYMONS, we notice, suggests whitewashing the interior of "the only beautiful modern building in London"—Westminster Cathedral: of course, only till the marble lining is ready and the mosaics are spread over the walls above. Mr. Symons understands that nothing is likely to be done in the nave and transepts for a year or so: so why not, he says, whitewash them, not too glaring a white? "It must be remembered that this is not a Gothic building, in which darkness counts for so much in the scheme of the architecture, but a building after the Byzantine pattern, in which every inch of space is to be coloured, and in which the architect has worked in a kind of co-operation with light. To leave the bricks as they are at present left is to obscure the whole beauty of the interior for one knows not how many years, until the decoration is completely finished. A temporary coating of lime would not only cover an annoying imperfection, but would send the whole church upwards and outwards into an actual and spacious beauty of its own." There is certainly no practical reason why the suggestion should not be carried out: but the tint would need to be far more subdued than "not too glaring a white," else we should have just as much a surfeit of light as there may now be a lack of it caused by the rough yellow stocks—why call them "hideous yellow bricks"?—"which absorb the light as a sponge absorbs water." Latterly there has been a good deal of comment about whitewashing—though of another kind: but we can hardly suppose Mr. Symon's suggestion to be other than favourably received.

A Professional Matter. A POINT of considerable interest to architects has arisen in connection with the erection of a new asylum for the London County Council. Mr. G. T. Hine, the well-known architect who planned the Horton Asylum, agreed with the Asylums Committee to undertake the design of a replica which is estimated to cost £400,000. He stipulated a fee of £10,000, and £3,000 extra for the quantity surveyors. In view of the usual percentage on such buildings, that was a reasonable demand. The Council, however, thought otherwise, and suggested he should undertake the work at £7,000; or, in other words, that he should bear the cost of the quantities. We have already insisted that quantities are taken out for the benefit of the client, who is consequently the proper person to pay for them; so far as the architect himself is concerned, the building could be erected from the drawings and specifications; priced quantities are solely to secure close tendering, which is of course all in the interest of the client. We are therefore glad to see that Mr. Hine has refused the Council's proposal, and that the Royal Institute has supported him in the matter; more especially as he received only £6,500 for the Horton Asylum and thereby suffered a loss. Mr. Hine explains that he cannot regard the Council's action as due to feelings personal to himself, but that it was either intended as an attack on professional charges or that it arose from a misconception of the facts of the case. In the former event, he adds, "I feel it a duty to my profession to resist it, and this consideration has influenced me as much as other more personal ones in declining your Committee's offer." In face of this the Committee reiterate that they think £10,000 is a reasonable fee. They add: "It may not have been appreciated that on account of the variation of levels it will be necessary to re-model to some extent a number of the working drawings, and that the whole of them will have to be re-drawn in order to obtain the several sets required for the proper execution of the work. We think that for a repetition of the Horton Asylum Mr. Hine should be the architect. If he is not appointed it will be necessary to obtain fresh designs from some other architect, which would involve many months' delay and in all probability entail much additional cost. We are, therefore, constrained to ask the Council to reconsider its decision in reducing the proposed fee to Mr. Hine."

THE COMPETITION FOR LIVERPOOL CATHEDRAL.

We think the good people of Liverpool who organize architectural competitions must be sadly in need of some little instruction in the ethics of such matters. As mentioned in our last issue, the Executive Committee have decided to ignore their advisory architects' report, and to reject the whole of the five designs submitted for the Cathedral. Now this makes the third large competition in Liverpool where similar courses have been taken, and, in view of the forthcoming Liverpool Cotton Exchange competition, it seems advisable to explain to all whom it may concern why architects are sometimes willing to enter for a competition where the stakes are quite incommensurate with the value of the labour involved.

From the views expressed to us by several Liverpool persons of prominence in the commercial world, it seems to be erroneously thought that upon the payment of the promised premiums competing architects have nothing more to say or to complain about. But this is not so, as a very little reflection would make apparent. It must be obvious that it would not be worth the while of any leading architect to enter a competition for the price of the premiums, even were anyone of these assured to him; but he might, and does, enter in the hope of his design being carried out. The actual preparation of the drawings which serve to convey his thoughts and ideas to the minds of others frequently costs more than the amount of the premium, which is invariably out of all proportion less than the proper scaled charges for such work. As an example, in the Liverpool Cathedral competition the premium is £300 for each competitor, whilst the ordinary scale charge would amount to £12,500 for each competitor, even assuming that the cost of his design did not exceed £500,000.

Apparently it cannot be too often explained that an architect's work is not, like cotton or sugar, to be considered as so much merchandize, to be bought at the price of producing so many drawings; for it is the knowing what to do and how to do it, the ideas of the architect and his skill in carrying them out, for which payment should be made; and this is not met by a mere premium any more than would a doctor's or a lawyer's services be valued at the price of a few bottles of medicine or some manuscripts.

We would also point out to our Liverpool friends that when an architectural assessor is appointed to advise in regard to a competition, this is regarded by architects as a guarantee of the good faith of the building committee and that there will be a knowledgeable adjudication upon the designs submitted. But the Liverpool practice, in effect, induces architects who would otherwise not compete to enter a competition, and then leaves the building committee free to act as though no skilled assessor had been appointed. In the three cases at Liverpool, we would pertinently ask why the respective building committees held a competition if they already knew what they required and intended to have; and if they only knew what to do and how to do it after the competition designs had been received and examined, then, are they justified in throwing over all the competitors whose united designs had been so instructive to them, and in employing an outsider to carry out ideas of which they were not previously in possession, and without adequately paying for them, as in the case of the recent Liverpool Corporation Baths competition?

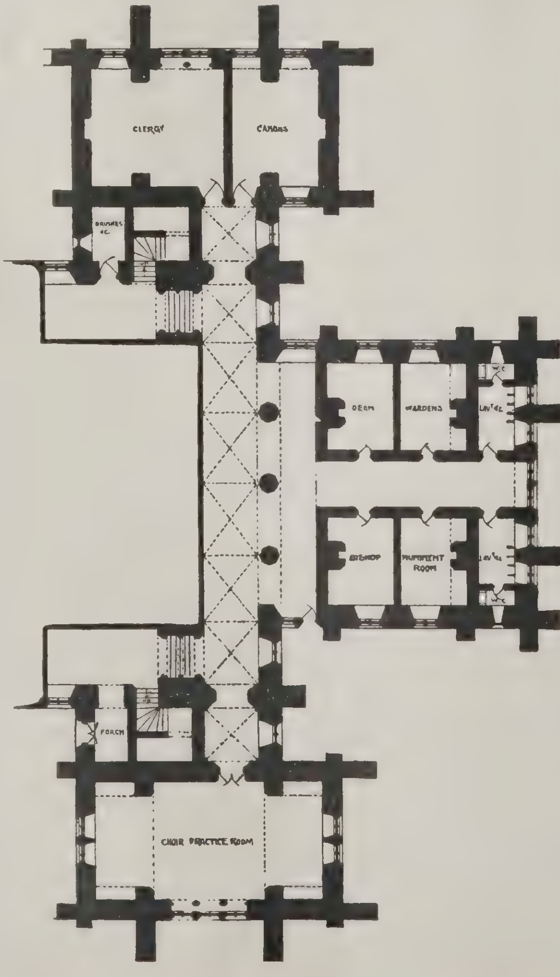
The Liverpool Cathedral competition has been, from its initiation, about as unsatisfactory as it possibly could be, but it may have served a useful purpose if it should offer a wholesome warning to architects and prove a check to the growth of practices in the conduct of architectural competitions which cannot be too strongly condemned.

To refer to the five designs submitted in the Liverpool Cathedral competition, these are, we believe, by the following authors:—

No. 1. Mr. G. Gilbert Scott.
„ 2. Messrs. Austin & Paley.
„ 3. Mr. W. J. Tapper.
„ 4. Mr. Malcolm Stark.
„ 5. Mr. C. A. Nicholson.

We publish large illustrations of Mr. Scott's design and small illustrations of the others, to give a general idea of them; these latter we shall republish on a large scale, with plans, section and detail, as soon as it is possible to do so: we need not therefore give a detailed description of them now, but some particulars of Mr. Scott's design will be found on the opposite page

The designs are practically the development of those submitted in the preliminary competition. At the time we expressed our disappointment with this earlier competition, and we are not able to modify our disappointment now that we have seen the fuller development of the five selected designs. In not one of them is there to be found a thorough grappling with the problem in hand, a modern cathedral, but in all are to be noted the trammels placed upon the effective working out of a really satisfactory scheme by the known predilections of the Committee for Gothic, and the absence of definite knowledge as to what the Committee required in respect of accommodation and disposition.



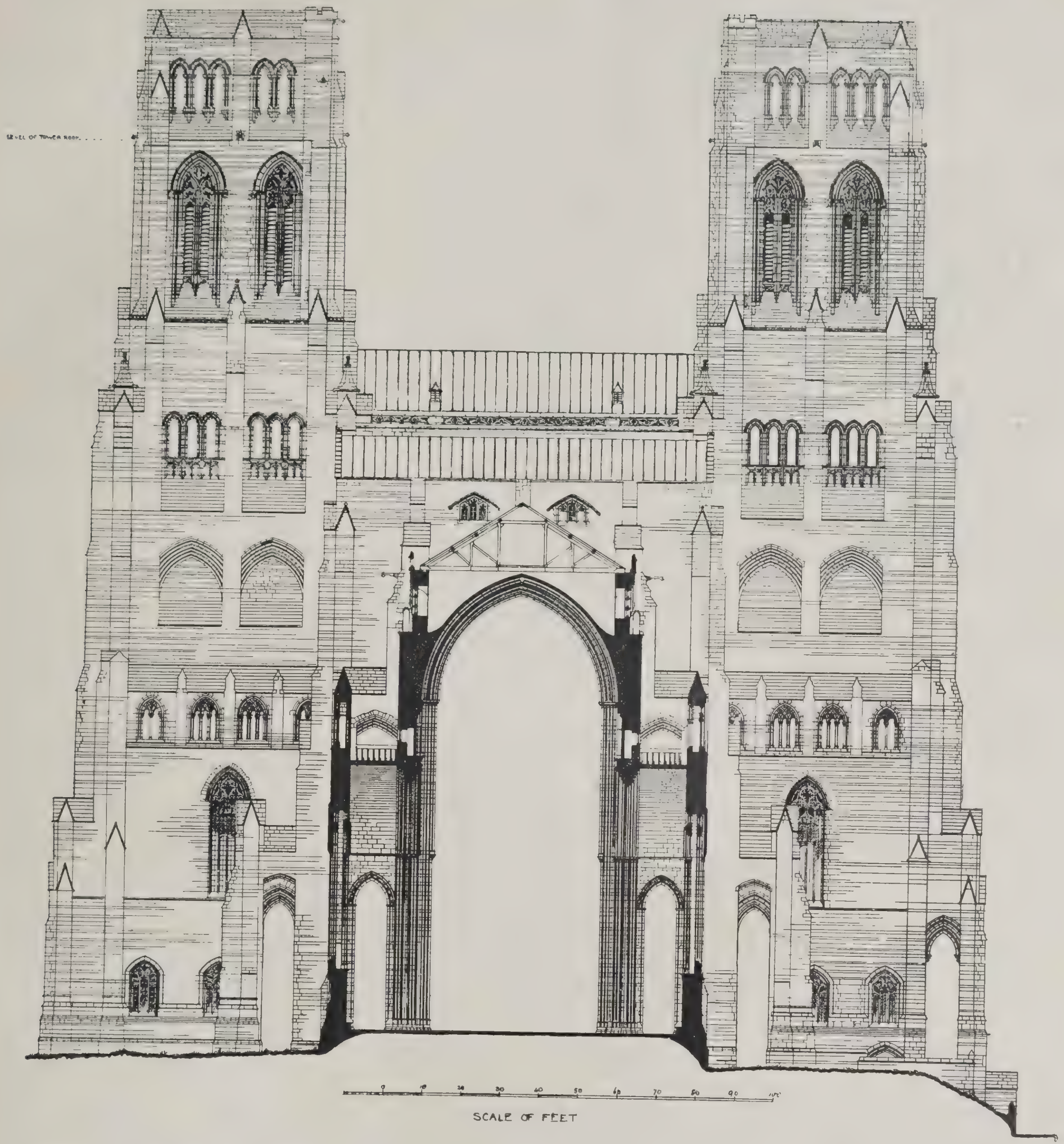
DESIGN FOR LIVERPOOL CATHEDRAL BY G. GILBERT SCOTT: PLAN OF CRYPT.

Of the five designs submitted we cordially endorse the advisory architects' selection of No. 1, as the one best worked out, showing greatest interest and originality, and suggesting the most scholarly yet restrained detail. But as we remarked when this design appeared in the earlier competition as No. 68, the transverse barrel-vaulting in the nave and chancel roofs "would, we think, undoubtedly mar the acoustics of the building without possessing any mitigating advantages." As traditional Gothic revivalist work this design has merit; but what we should like to see would be equal knowledge and skill applied, upon less orthodox lines, to the solution of the problem of a cathedral built in present times and entirely suited to modern needs.

Design No. 2.—The grouping of the two transept towers and of the central tower and dome does not strike us as happy and well-balanced. In the detail there is great monotony and a want of effective proportion, whilst the hidden-iron-girder construction in connection with Gothic forms seems to us to be singularly out of place as not conforming to the construction which prevailed in Gothic times, which would seem to be desirable in the case of a design based upon mediæval detail. In this design, more than in No. 1, we seem to see exemplified the unsatisfactory note of all the designs, an ill-digested magnifying of parish church work and the re-hashing-up of familiar mediæval forms. In particular we may notice the one-bay-multiplied-ad-lib style of treatment in the nave, and the juxtaposition of coarse detail in the lower stages of the central tower with the more attenuated detail adjacent, as though there had been, owing to the size of the building, an exhaustion of the records of precedent. After a study of this design for the Liverpool Cathedral, we recall the church at Stockport by the same authors with the greater pleasure.

Design No. 3.—This design is a further illustration of that which we should like to see the end of, the busy reproduction of mediæval forms. At the north (orthodox west) end two flanking towers, at the crossing a flèche, at the south (orthodox east) end a tower and a spire campanile, and interminable details of altar cloth, font, cloister fountain, and such like, suggest a commendable study of mediæval architecture by the author of this design, but not a grasp of the requirements of a modern cathedral as a result of those researches. This is the twentieth century and not the fourteenth; but were this design carried out, and mellowed by time, it might be difficult to say whether the fabric were a nineteenth-century "restoration" of some mediæval cathedral, or a full-sized model of old work. We should think the cathedral would cost much more than £500,000 if all that is suggested by these drawings were carried out.

Design No. 4.—The author of this design appears to have endeavoured to adapt to the purposes of a cathedral the plan of a wide nave and narrow aisles frequently seen in modern parish churches. The result is a large unimpeded area for the congregation, but in so large a building those at the end of the nave would not be well placed for hearing the preacher, if that is a *sine qua non* for a cathedral. A flat roof and the position of the bishop's throne behind the altar are unusual features. The interior is not happy in its fenestration, there being so little intervening wall-space as to give the appearance of tier upon tier of windows. Externally, there is not a proportionate disposition of the parts. Huge arches are rendered abnormally so in appearance by a multiplicity of small adjacent features;



DESIGN FOR LIVERPOOL CATHEDRAL: CROSS-SECTION THROUGH NAVE, LOOKING SOUTH. G. GILBERT SCOTT, ARCHITECT.

and the side and end elevations are not well balanced. The campanile is so far removed from the main fabric as almost to suggest its entire disconnection therewith. If the author of this design had been free to break from Gothic traditions, and to allow his versatility, which has produced no fewer than four different treatments of the cathedral subject, to evolve a fine conception of a modern building, we feel assured the result would have been more satisfactory. We blame the Committee and their notions, not the skill of the competing architects.

Design No. 5.—In this design an hexagonal crossing with a twelve sided lantern tower in two storeys superimposed, embracing the nave and aisles, and flanked by four semi-hexagonal blocks forming transepts, decidedly unusual; but these features are very bulky and throw the rest of the building out of due proportion. We should think that, subject to its being Gothic, it would be not easy to get a larger preaching-space than is secured by this design, yet it has shared the same fate as the other four, which seems to lend some colour to the persistent rumours which prevail to the effect that the ostensible reason put forth by the Committee for rejecting all the designs is not the real one. The detail of this design, traditional Gothic, by an author whose accomplished work is so much fresher and more interesting than in this design, makes us again express our regret that the conditions laid down and the predilections expressed by the Committee have brought about a lifeless result, instead of what should have been the most noteworthy architectural event of the year.

Mr. Scott sends us the following particulars of his design:—The general treatment is severe and relies for its effect upon the grouping and proportion of the various parts. In order to increase the effect of mass, transepts have been introduced throughout the length of the building; the interior of these transepts being well lighted, and the intervening barrel-vaults fairly dark, would give a curious effect of light and shade to the interior. The nave and choir are wide (50ft.), the aisles narrow, being intended solely as a means of access to the seats. The entrance at this quasi west end consists of three great arches which open upon the cloister court. The cloisters enable persons alighting from carriages to reach the building under cover should it be necessary. The large flanking towers—connected by a gable higher than the adjoining nave and choir roofs—form the culminating feature of the exterior. The stone proposed was red Runcorn with wide joints.

Views and Reviews.

The Ventilation and Heating of Churches, &c.

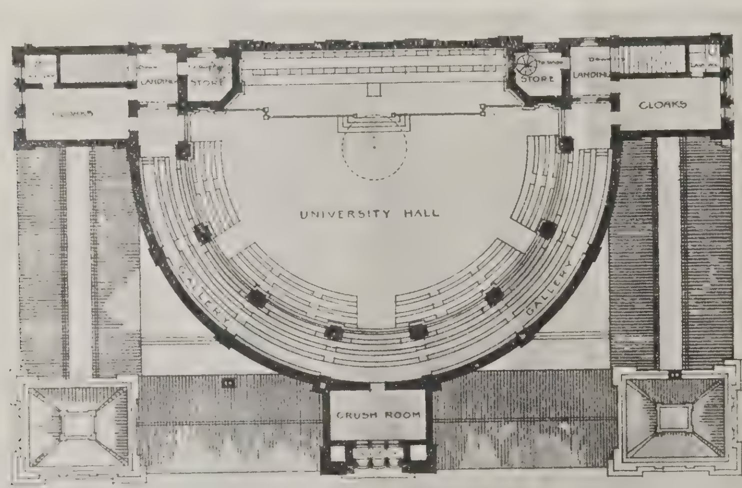
This little work provides a good deal of wholesome thought for architects and others on an exceedingly intricate and troublesome, though necessary, science. The author has brought many years' experience to bear upon his subject, not only in considering the theories advanced by ventilating experts, but in an examination of the results achieved by them in various buildings. It is almost needless to add that these results do not in many cases agree with the ideas and intentions of the designers. The nett result of the author's investigations seems to demonstrate that all "systems" of ventilation are more or less open to question; that every building must be considered solely on its own merits; and that any attempt to fit a building to a "system" instead of a system to a building is fore-doomed to end in failure. Many architects will doubtless be surprised to learn that such outside influences as the position of the building in the street, the width of the street, the position of the street with regard to prevalent winds and the points of the compass, the height of the surrounding houses, &c., all play important parts in deciding the best scheme for ventilation and its application. The author points out (p. 38) that "example after example can be given of buildings where natural ventilation, as it is sometimes called, has been adopted, and where calculations had been most carefully made of the exact outlet space necessary when so many Tobin shafts of such an area were furnished, but the position of the buildings in the town, the probable action of the prevailing winds, and the ground swirl or suction never received a thought. The consequence is that all these nice calculations are useless, and the system (?) of ventilation has its action reversed every time there is a strong breeze or wind blowing. The larger the apertures in the shaft inlets the more violent will be the wind effects."

Chapter V., which is entitled "Churches and Public buildings as they are," gives several examples of structures examined by the author disclosing defective ventilation, and is illustrated by numerous valuable diagrams showing the air-currents found to exist in these buildings. No good purpose would be served by a long review of this book, which is full of experience notes. It is a book every architect and student should possess, and possessing, should read, mark, learn and inwardly digest. There is no subject that is so little understood by architects as ventilation.

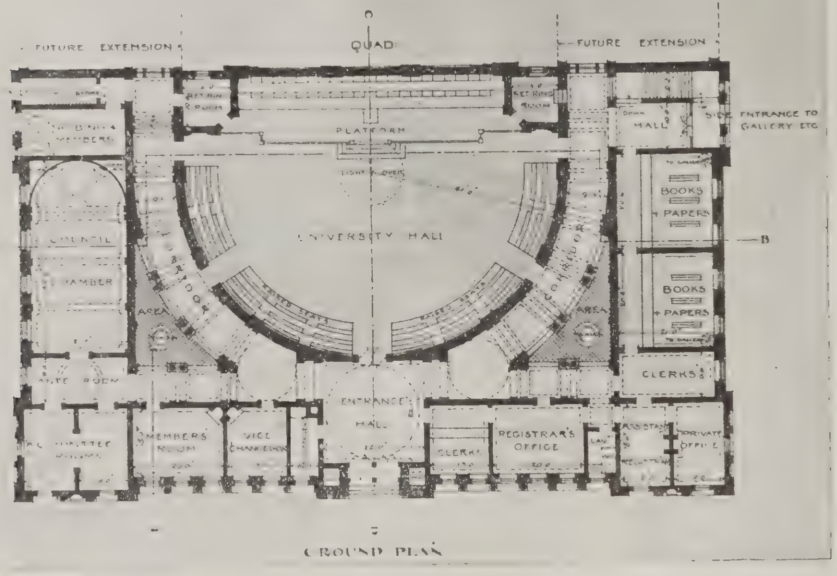
"The Ventilation, Heating and Management of Churches and Public Buildings." By J. W. Thomas, F.I.C., F.C.S. Price 2s. 6d. London: Longmans, Green & Co., 39, Paternoster Row.

NEW MIDLAND HOTEL, MANCHESTER.

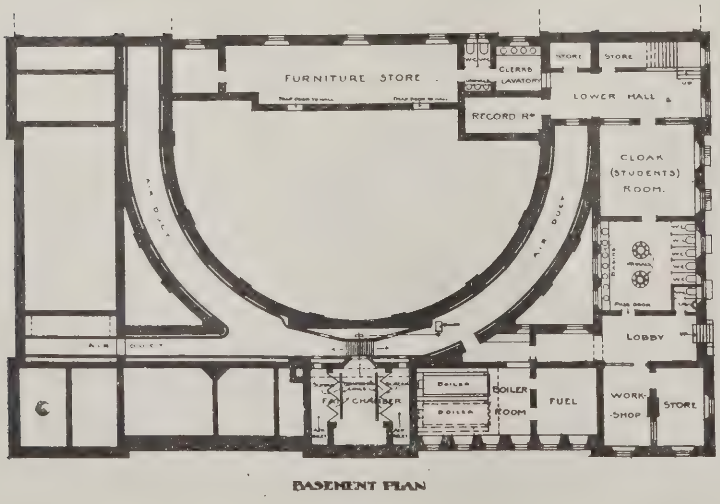
We regret that a mistake occurred in our reference to the work done at this hotel by Messrs. Peace & Norquoy, of Ancoats, Manchester. They did not supply any of the well-known folding partitions of which they are the patentees and makers (the latest particulars of which can be gathered from the advertisement on p. xi of this issue), but obtained the order for the internal fittings (not furnishing) to the service-rooms, cloakroom, counters, fixtures and a large quantity of cupboards and shelving for storerooms, and over 300 mahogany and oak tables. The patent folding partitions made by Messrs. Peace & Norquoy are admirably simple and compact, and have been fitted in schools, colleges, churches, lecture halls, &c., all over the kingdom. They consist of a series of hinged leaves carried by pulley-wheels at the top, being guided at the bottom by a groove across the floor. The leaves are made in panelled framing from 2in. thick, with wood or glass panels, and fold back one on another against the wall when it is required to have the room clear. The partitions occupy very little space and possess that rigidity so essential in a schoolroom; they run with the greatest ease and have no tendency to stick. A list of the buildings for which they have been supplied shows the remarkable popularity which these partitions enjoy. The only preparation needed for them is a wood beam at the top, not less than 7in. wide on soffit, to which the gearing can be attached; thus there is no cutting away of joists and the forming of deep channels in the floor; and being firmly secured at the top, there is no risk of accident from the sections falling over. For all purposes where it is desired to divide up any room these partitions will be found to give the utmost satisfaction.



PLAN OF SPECTATORS' GALLERY



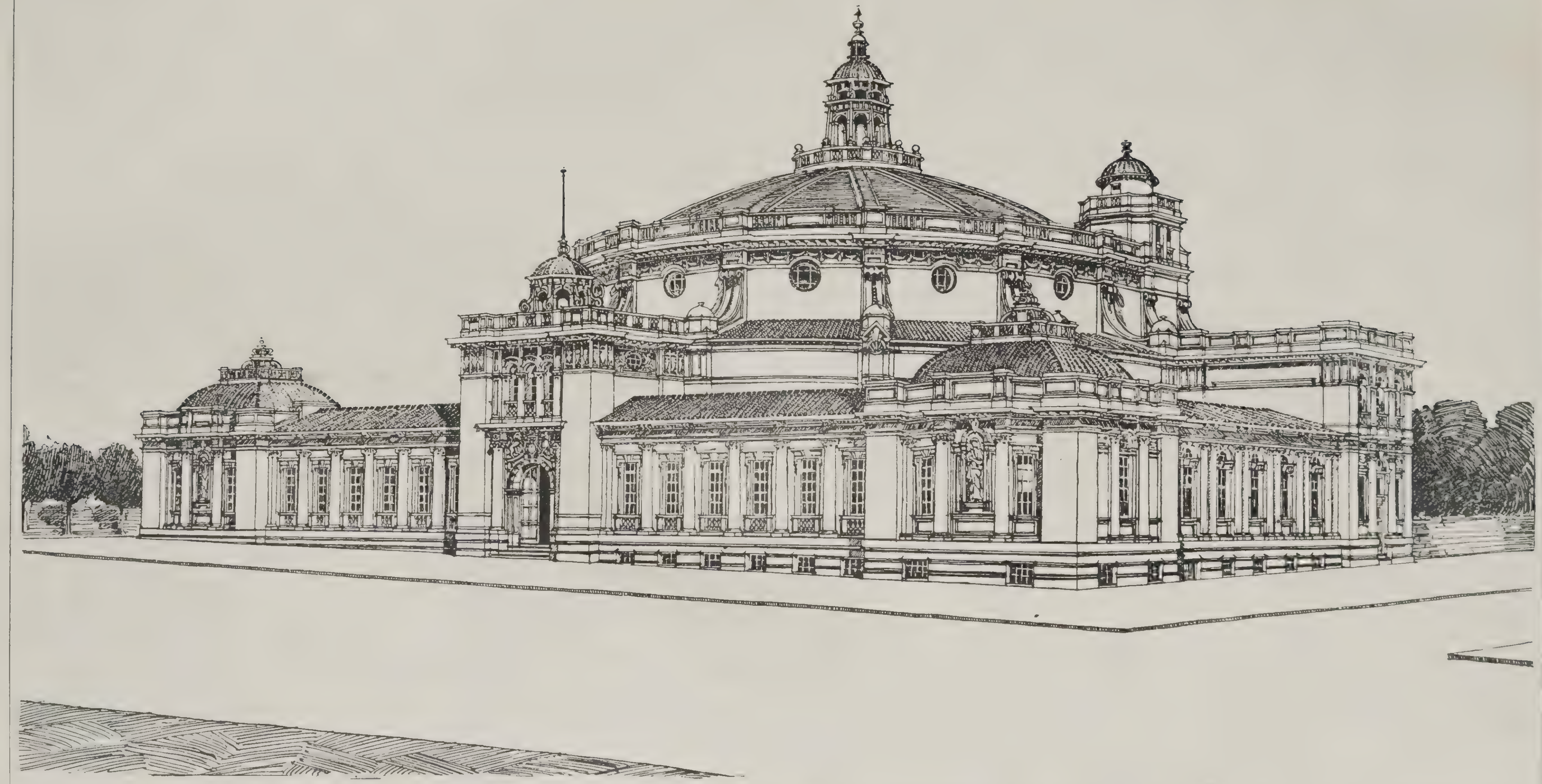
GROUND PLAN



BASEMENT PLAN

SCALE

PLANS OF FIRST-PREMIATED DESIGN FOR UNIVERSITY BUILDINGS AT THE CAPE OF GOOD HOPE. W. HAWKE, A.R.I.B.A., ARCHITECT.



FIRST-PREMIATED DESIGN FOR UNIVERSITY BUILDINGS AT THE CAPE OF GOOD HOPE. W. HAWKE, A.R.I.B.A. ARCHITECT.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Problem in Land Surveying.

LONDON, S.E.—A SUBSCRIBER writes: "Kindly give the solution to the following question, recently set at an examination on land surveying:—'Construct a triangle A, B C, having its sides A B = 3in., B C = $2\frac{1}{2}$in. and A C = $1\frac{1}{2}$in. Suppose the points A, B and C to be trigonometrical stations of a survey, and that from a point D of a traverse, A bears 120 degs., B 150 degs. and C 165 degs., find the point D by construction.'"

In cases of this kind it is sometimes supposed that the observed angles can be plotted as reverse bearings from the known points A B C to intersect on point D, but this will only happen if the bearing of one of the sides of the triangle A B C is given. Failing this, the method to be adopted will be that used in hydrographical surveying for observations from a boat. Plot the triangle A B C in any position with the letters clockwise, then note that the bearing of A being 120 and B 150, the angle between the two directions is 30 degs. Upon each extremity of the base A B set up an angle of 90 − 30 = 60 degs., and from the apex of the triangle so formed describe a circle passing through points A and B. Then note that the bearing of B being 150, and C 165, the angle between the two directions is 15 degs. Upon each extremity of the base B C and upon the side facing A set up an angle of 90 − 15 = 75 degs., and from the apex of the triangle so formed describe a circle passing through points B and C. The intersection of the two circles will give point D, and the north point being placed so as to make D A bear 120 degs. eastwards, the other points will be found to have the observed bearing. HENRY ADAMS.

Walls, Floors and Ceilings of Infectious Diseases Hospital.

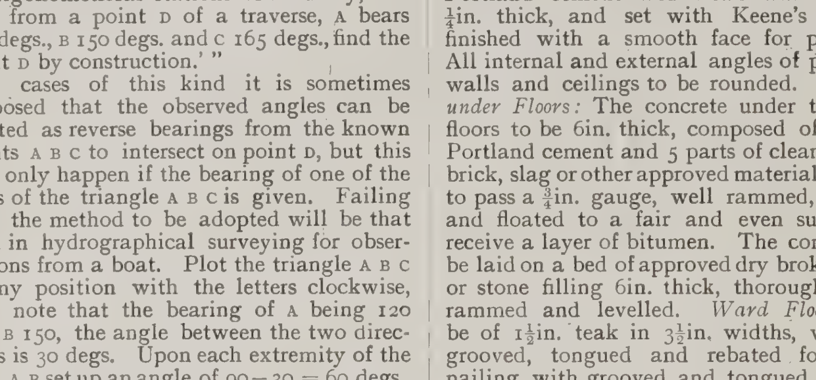
CARDIFF—PERFECT writes: "How are the walls and ceilings of an infectious diseases hospital best finished, and of what material should the floors be composed?"

Walls: Render and float $\frac{5}{8}$in. thick in equal parts of Portland cement and clean washed sand, and set with neat Keene's cement $\frac{3}{16}$in. thick, finished with a smooth face for painting. *Ceilings:* Lath, render $\frac{1}{2}$in. thick with haired mortar gauged with Portland cement, float with equal parts of Portland cement and clean washed sand $\frac{1}{4}$in. thick, and set with Keene's cement, finished with a smooth face for painting. All internal and external angles of plastered walls and ceilings to be rounded. *Concrete under Floors:* The concrete under the ward floors to be 6in. thick, composed of 1 part Portland cement and 5 parts of clean broken brick, slag or other approved material, broken to pass a $\frac{3}{4}$in. gauge, well rammed, levelled and floated to a fair and even surface to receive a layer of bitumen. The concrete to be laid on a bed of approved dry broken brick or stone filling 6in. thick, thoroughly well rammed and levelled. *Ward Floors:* To be of $1\frac{1}{2}$in. teak in $3\frac{1}{2}$in. widths, wrought, grooved, tongued and rebated for secret nailing, with grooved and tongued heading joints. The floor boards to be tightly wedged up, secret nailed with $2\frac{1}{2}$in. nails weighing 20lbs. per 1,000, and laid solid on 3in. by $2\frac{1}{2}$in. creosoted fir joists splayed on one edge, spaced 14in. apart and embedded in the concrete. Before the floor boards are laid the concrete is to be covered with a layer of bituminous composition $\frac{3}{8}$in. thick, composed of pitch and tar mixed in the proportion of 1 cwt. of pitch to $7\frac{1}{2}$ gals. of tar, boiled together for at least one hour, so that whe cold it is elastic and tough. The fir joists t be creosoted in vacuum until the moisture i extracted, afterwards subjecting the creosot to a pressure of not less than 100lbs. pe sq. in. until 8lbs. of creosote per ft. cube hav been injected into the timber. The floors t be finished with 3in. by 3in. solid teal hollowed skirting, grooved for floor board and chamfered for plastering, with soli circular teak blocks to all quadrant corners rounded angles, &c. The skirting to b fixed to the floor-joists with 3in. screws, th heads of the screws being let in and covere with white-lead putty tinted to match th colour of the wood. After the floors are lai the surface is to be rendered non-absorben by treatment with paraffin in the followin manner—Paraffin in the solid state to b melted and poured over the wood floo and then forced into the pores of the woo with hot irons. The surface to be the thoroughly well polished by rubbing with brush. The wood skirtings to be also treate in the same manner. Another form of floo construction which is largely used for infectious hospitals consists of concrete floo finished with pitch-pine or other wood bloc paving, whilst in some instances marbl mosaic paving has been adopted. Th latter description, whilst excellent in som respects, has, however, the disadvantage o being very cold to the feet of patients i they stand or walk upon it. T. E. C.

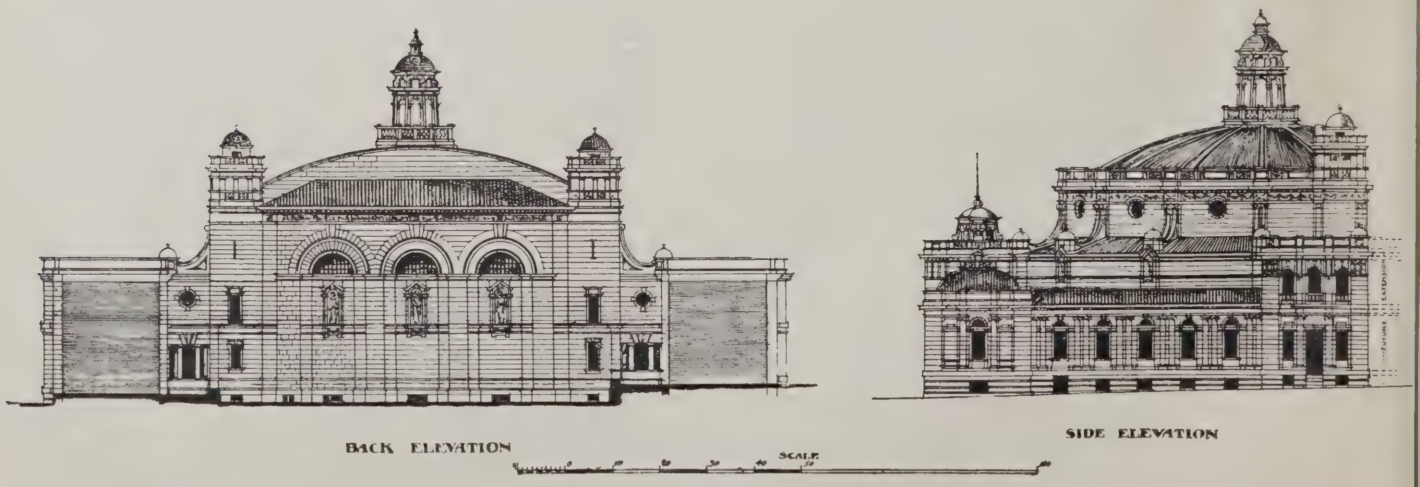
Sale of Practice.

DEVON writes: "What would be a fa price to ask for a county architect's practic bringing in a nett income of, say, £500 year?—in addition to which there are tw public appointments bringing in an averag of £100 a year: total £600?"

The value of a practice is an exceedingl difficult thing to determine, varying fro one to three years' purchase according t circumstances. To ensure a high value, th average income must have been fairly stead for a considerable number of years as substantiated by well-kept and properly audite books, and the seller must be able to giv such an introduction as would lead in a probability to the maintenance of at lea an equal average by a competent successo In the present instance succession to th appointments would be problematical—o at any rate speculative; and the loss o either might very possibly entail loss o *clientèle* also by introduction of a riv practitioner. In fact, the practice is wort just so much as it is worth a purchase while to give for it. This could only b ascertained by sealed offers after sever gentlemen had been allowed to inspect th books and been told the circumstances ful —or by arbitration if only one probab purchaser be in view. G. A. T. M.



FRONT ELEVATION



BACK ELEVATION

SIDE ELEVATION

FIRST-PREMIATED DESIGN FOR UNIVERSITY BUILDINGS FOR THE CAPE OF GOOD HOPE. W. HAWKE A.R.I.B.A. ARCHITECT.

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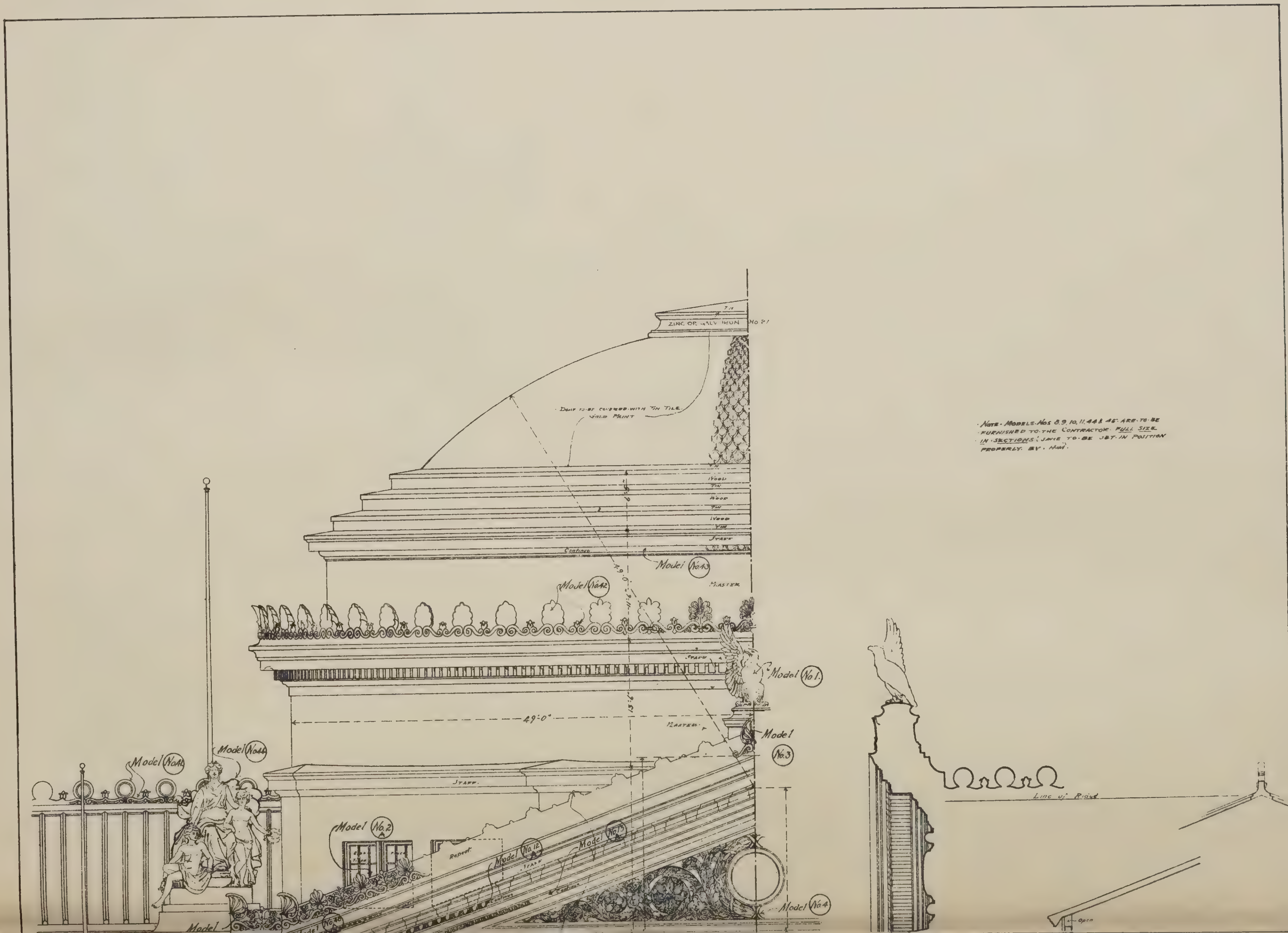
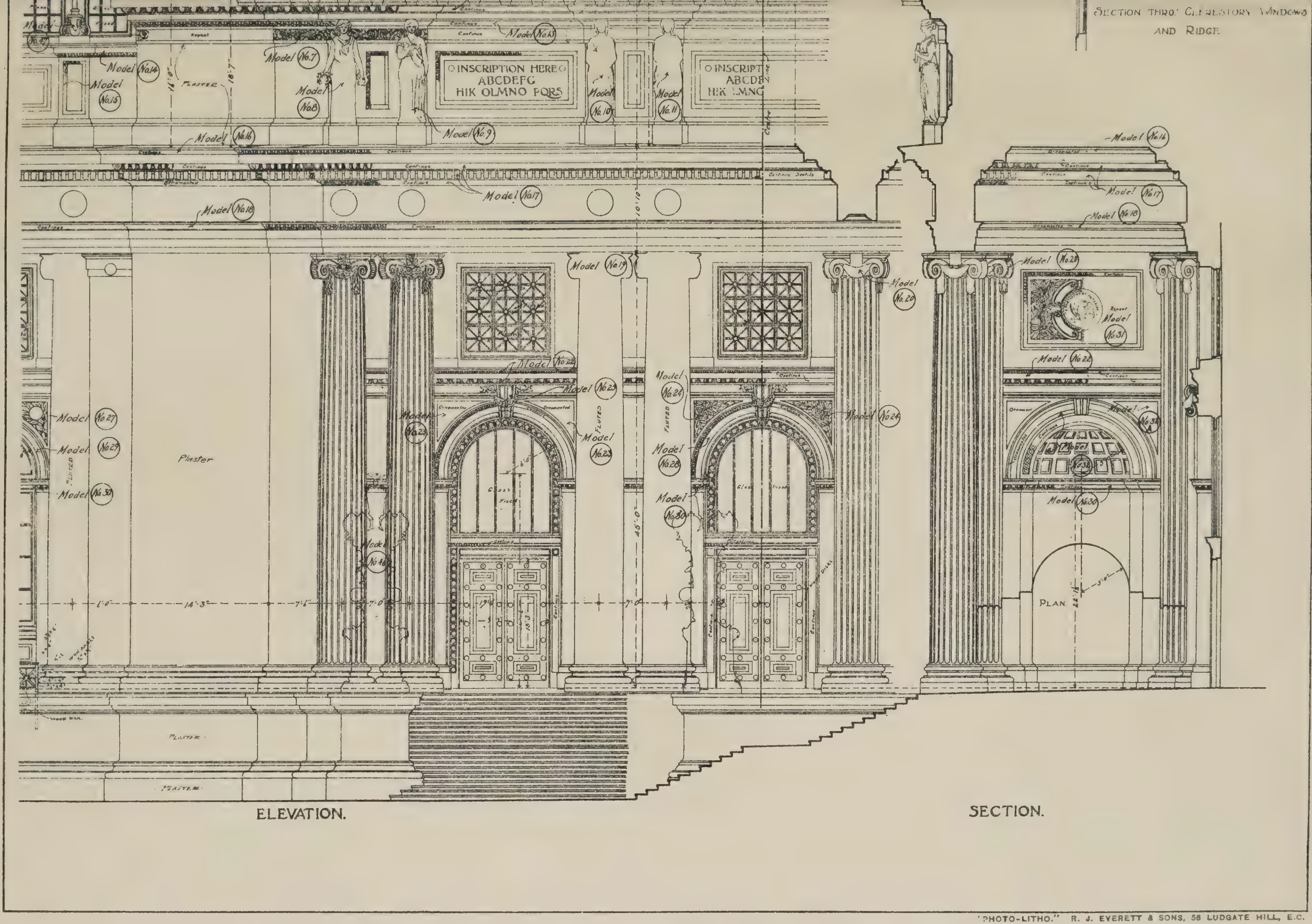
Supplement to
The Builders' Journal and Architectural Record,
Wednesday, May 27th, 1903.





"PHOTO-LITHO." R. J. EVERETT & SONS, 56 LUDGATE HILL, E.C.

DETAILS OF CENTRAL PAVILION, UNITED STATES GOVERNMENT BUILDING, LOUISIANA PURCHASE EXPOSITION, ST. LOUIS.

JAMES KNOX TAYLOR, SUPERVISING ARCHITECT.

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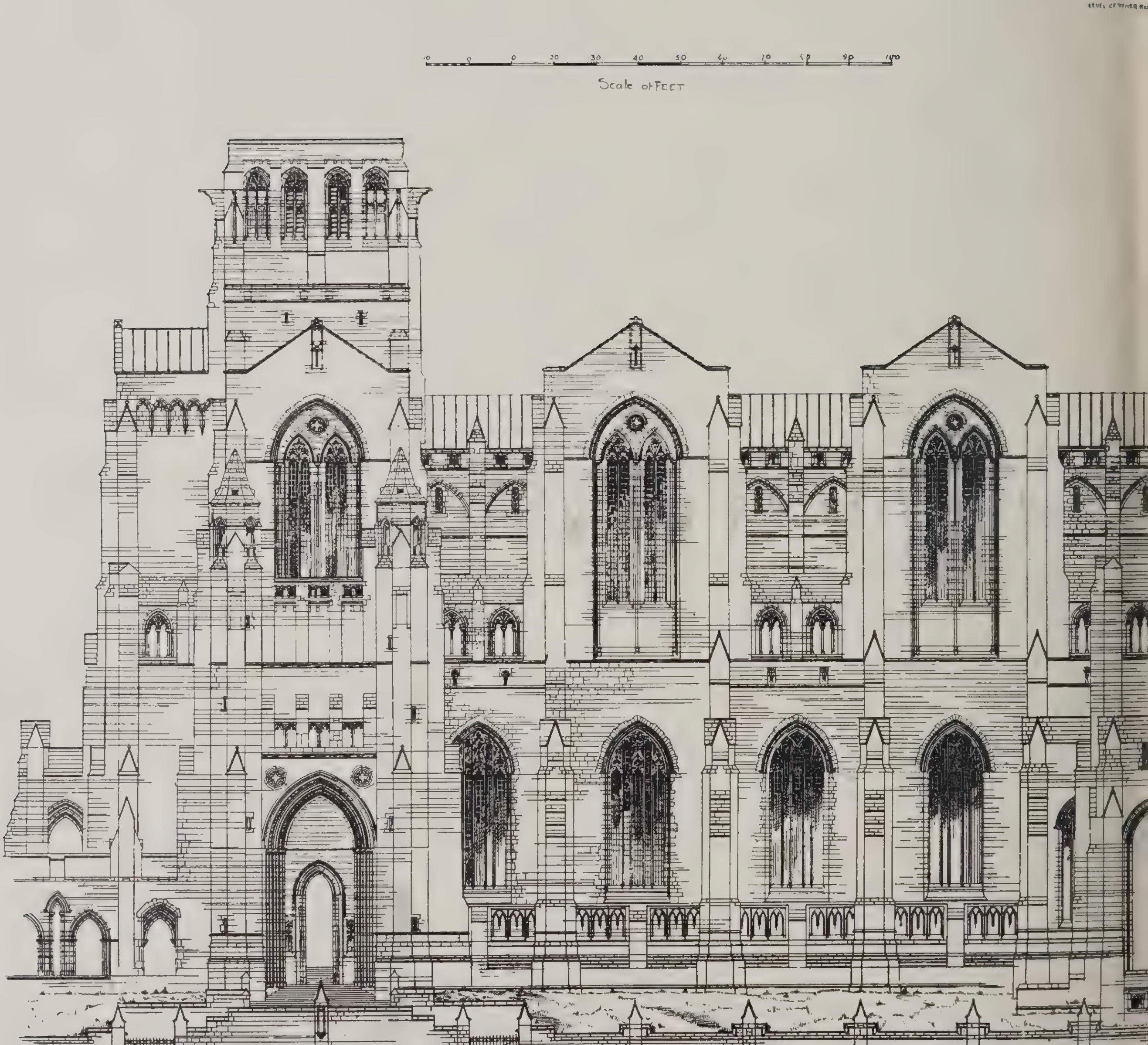
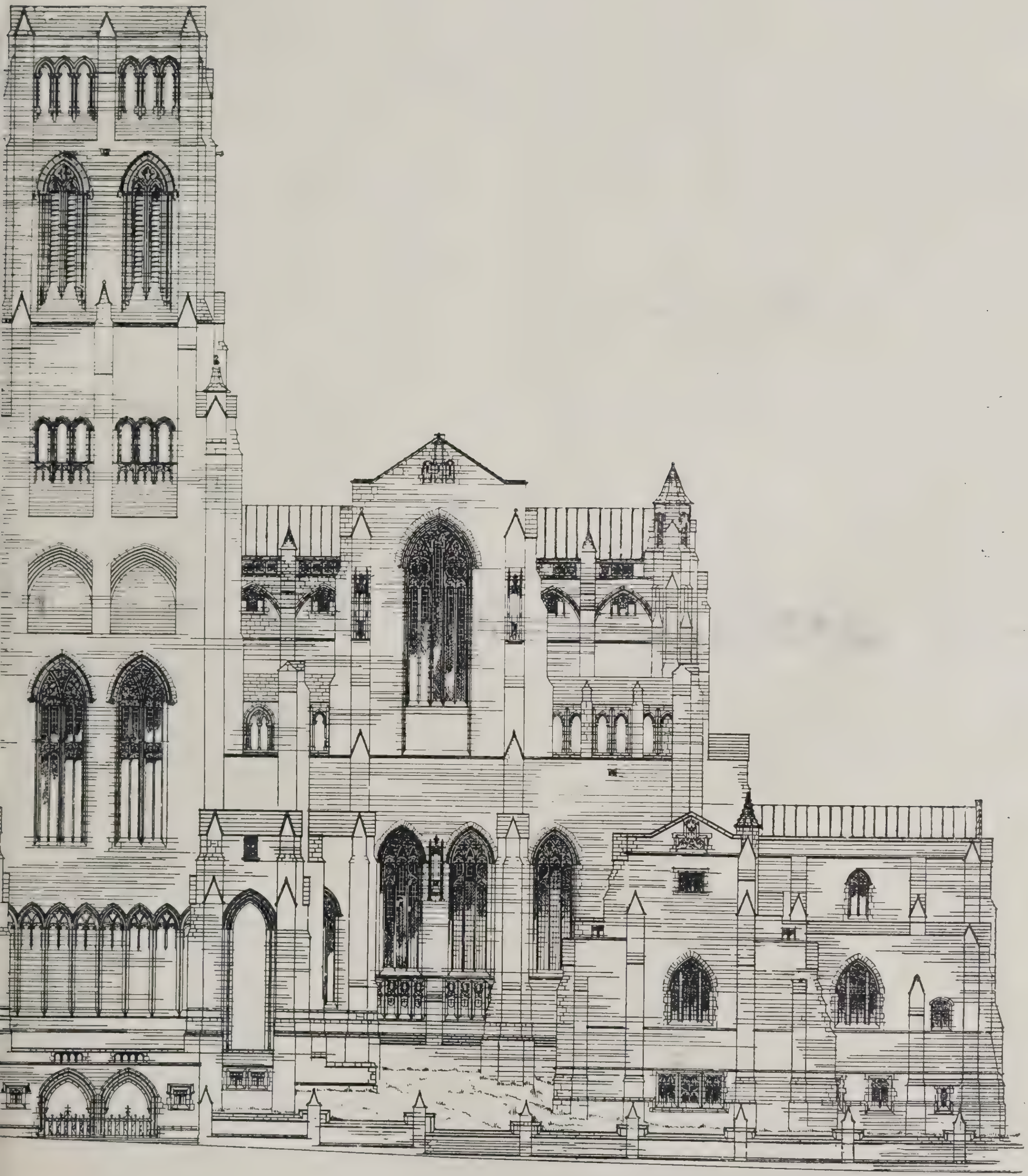
The Builders' Journal and Architectural Record,
Wednesday, May 27th, 1903.



Design for Liverpool Cathedral placed First by the Assessors: Lo



dinal Elevation Facing West. G. Gilbert Scott, Architect.

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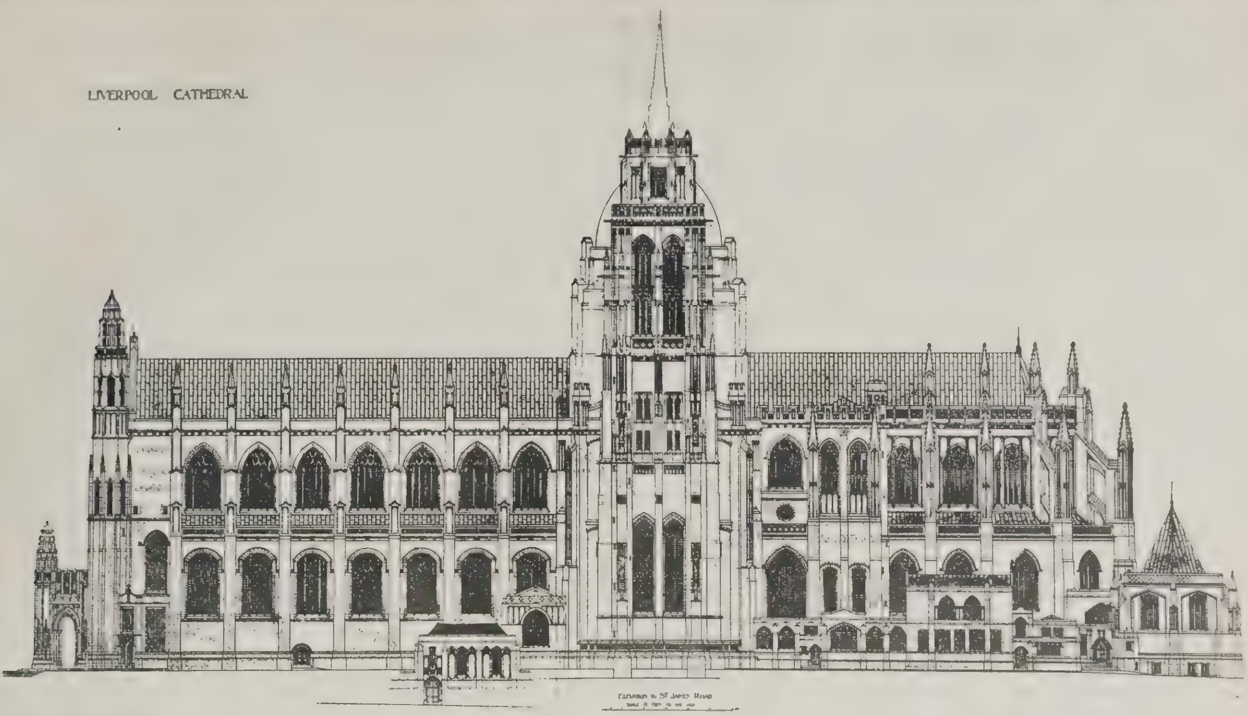
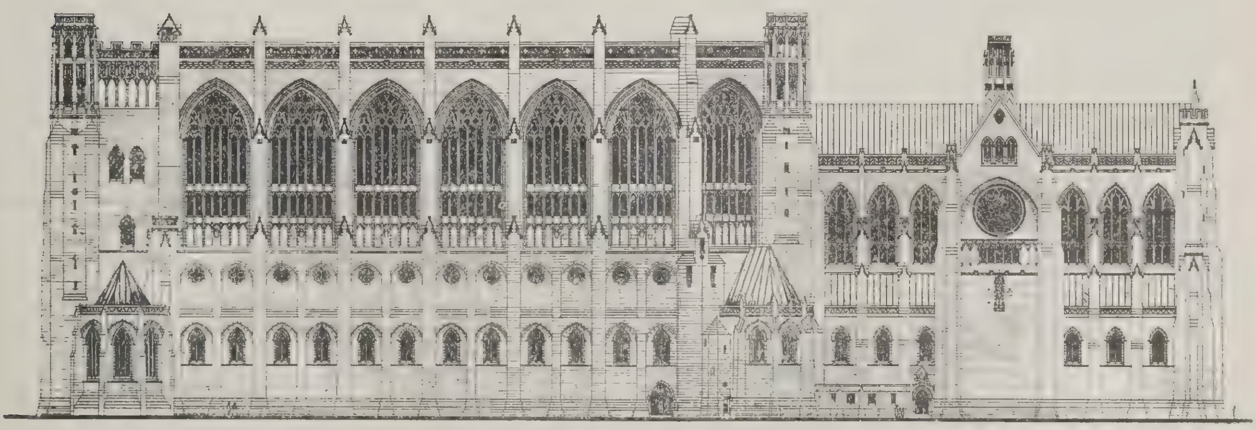
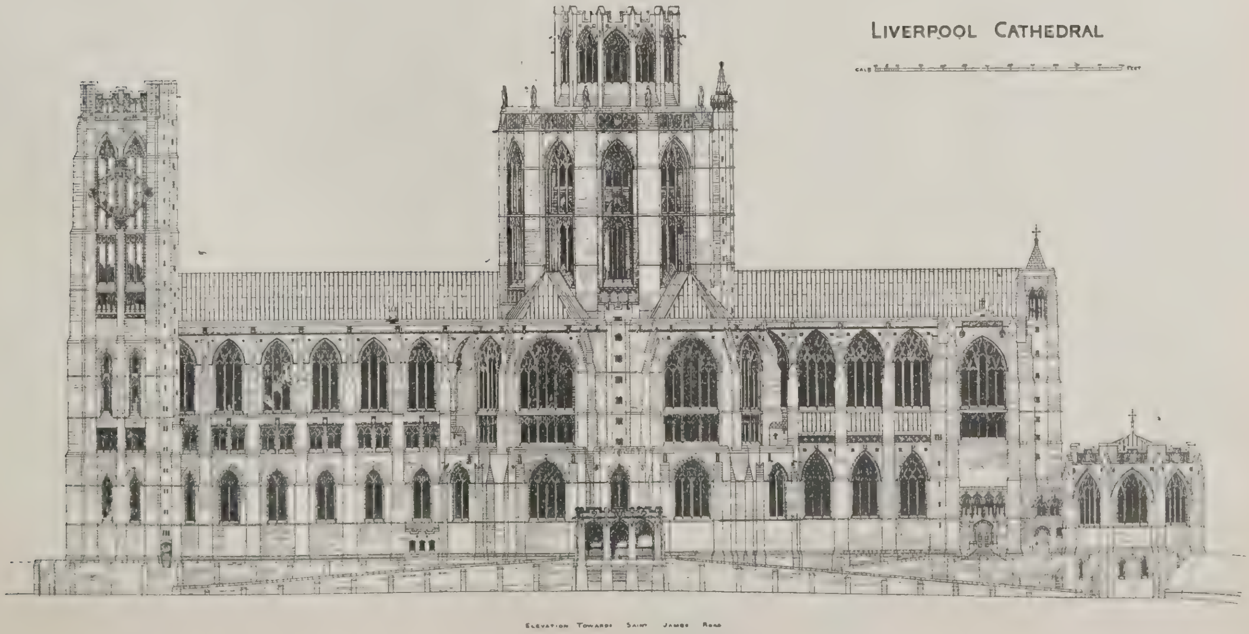


AUSTIN AND PALEY, ARCHITECTS.



W. J. TAPPER, ARCHITECT.



C. A. NICHOLSON, ARCHITECT.

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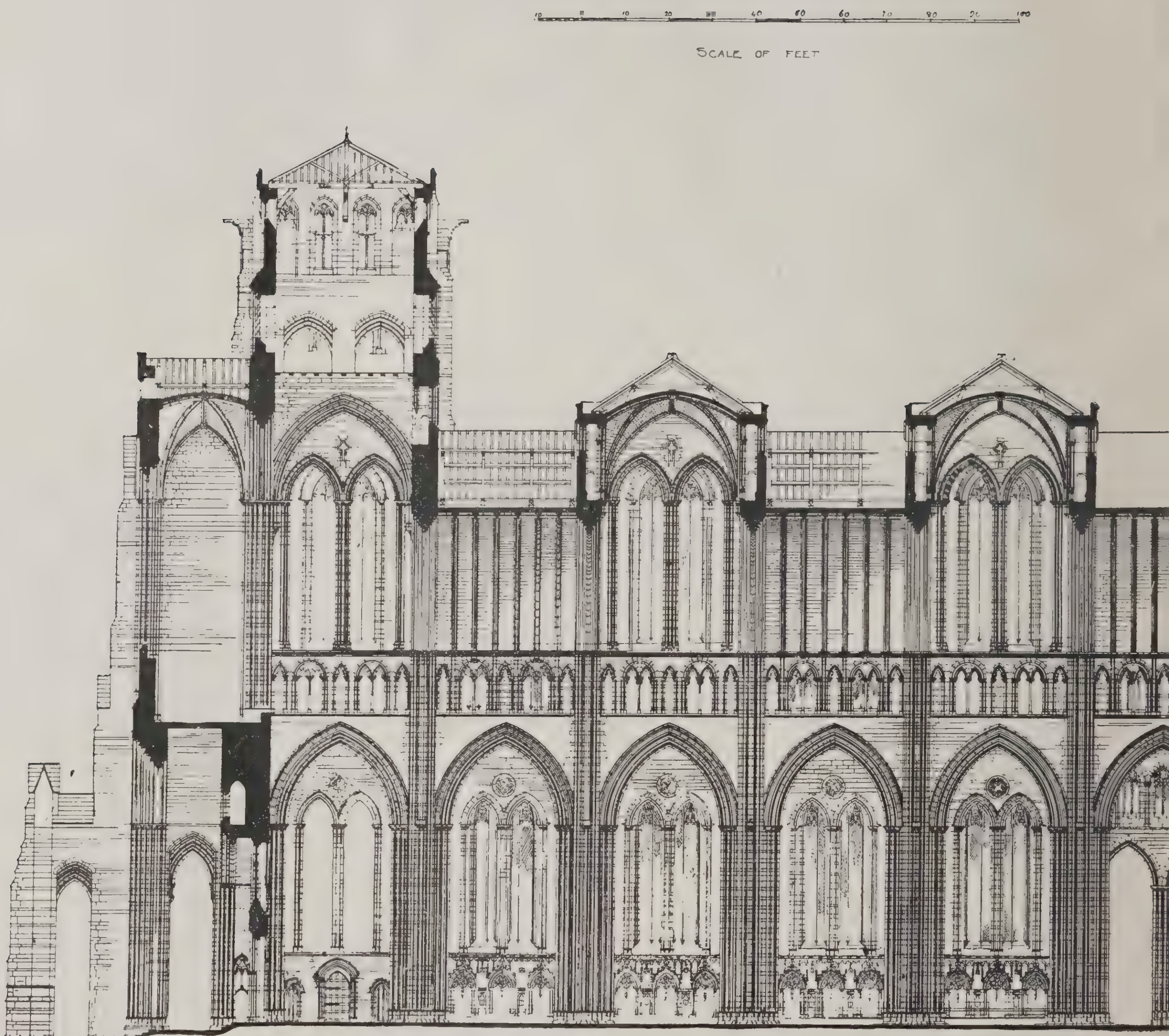
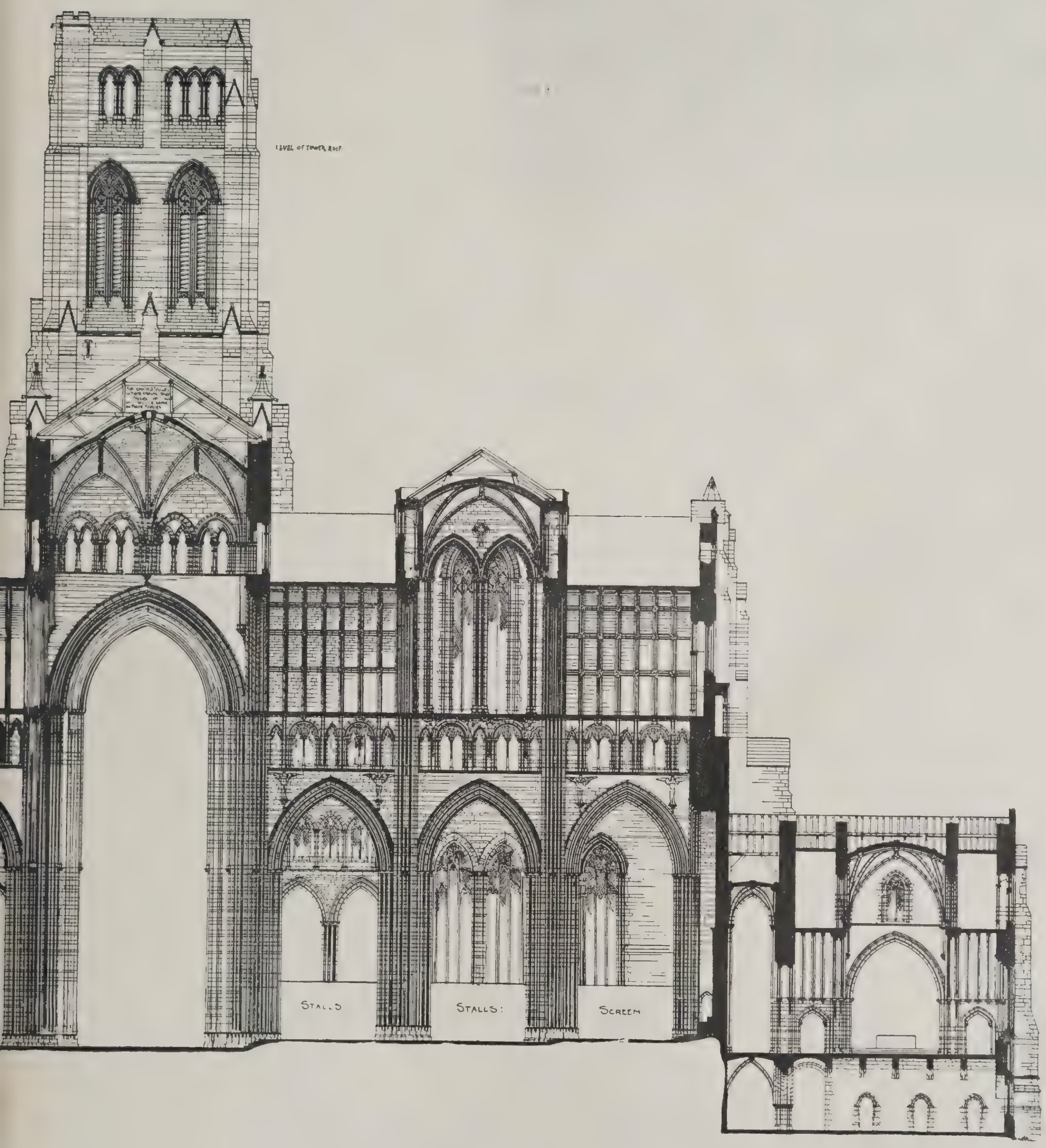


DESIGN FOR LIVERPOOL CATHEDRAL: LONGITUDI



SECTION. G. GILBERT SCOTT ARCHITECT.

THE NEW KEW BRIDGE.
SIR JOHN WOLFE BARRY, K.C.B., AND C. A. BRERETON, M.I.C.E., ENGINEERS.

Keystones.

The new Kew Bridge was opened by his Majesty the King on Wednesday last. In our next issue we hope to publish the engineers' drawings.

Sutton Coldfield Competition.—The Town Council of Sutton Coldfield, near Birmingham, has accepted the design for its proposed town hall by Messrs. Mayston & Eddison, of Bedford Row, London, and Wharncliffe Chambers, Sheffield. About forty firms of architects competed. A leading feature of the structure is that it consists of one storey only. The town hall is intended to hold 650 persons. It is probable that a gallery will be added, to afford accommodation for 150 more. The length to the stage will be 78ft. and the width 42ft.

The Preservation of Historical Buildings.—In the House of Commons last week Mr. Yoxall asked the First Lord of the Treasury whether he would consider the appointment of a Select Committee of the House to enquire into the desirability of establishing in the United Kingdom a system of national protection and conservation of buildings of historical or biographical interest, such as exists in France under the Loi du 30 Mars, 1887, whereby a Government grant of 1,427,000 francs is available for the purpose this year. Mr. Balfour said he should be very sorry to express any opinion on the question, or even go the length of saying that it was ripe for discussion before a committee of the House. He had looked at the French law and found that it entirely turned on the discretion of a Minister who was competent, or understood to be competent, to deal with questions of this kind. He was not sure that he would like to add to the labours of the central Government in this country such responsibility as the copying of the French law would entail.

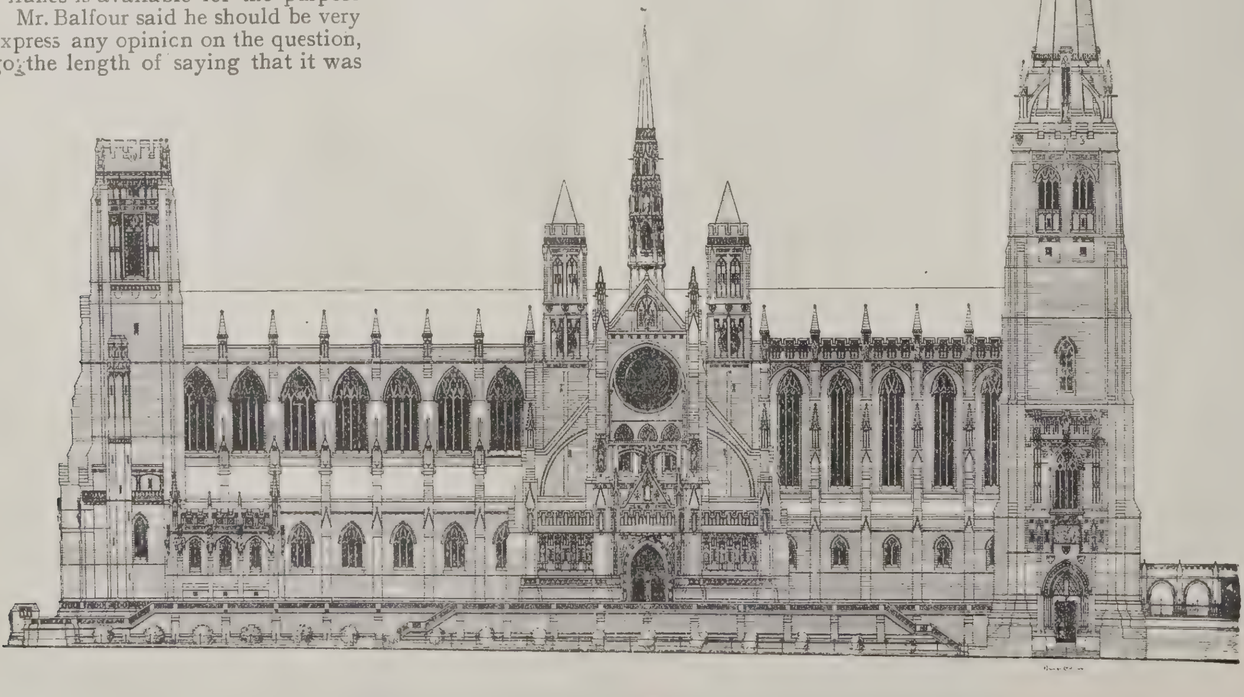
The Stratford-on-Avon Cottages.—At a council meeting of the British Archæological Association held last week the following resolution was passed: "That, having heard Mr. Allen S. Walker's account of the proposed alteration to the house of Shakespeare's cousin (known as Birch's shop), it is the opinion of this council that it is desirable that its condition should be interfered with as little as possible, and that the removal of the brick front should not be carried out." A second resolution was to the effect that the removal of the brick fronts from the cottages adjacent to the birthplace should not be carried out.

Vauxhall Bridge: Plaster Pylons to be Erected.—At last week's meeting of the London County Council the revised design for the new Vauxhall Bridge (published in our last issue) came up for discussion. Mr. Straus moved an amendment that the question of the pylons should be deferred until the Bridges Committee had further reported. Mr. Norman Shaw, one of the most eminent architects of the day, had expressed himself in favour of having pylons at the entrance to the bridge on the north side. Mr. Emden thought the pylons should only be carried up far enough to form bases for statuary. All that was necessary to make a handsome bridge had been brought into the design submitted, which met with the general approval of a large body of the most eminent artists and architects. Mr. Burns thought that the pylons should only be carried up to the level of the parapet. Upon that foundation they could cheaply erect plaster pylons to the height suggested in order that their effect might be considered before permanent structures were placed there. The amendment was carried and Mr. Burns's suggestion adopted.

Edinburgh Surveyors' Students. — The Ordained Surveyors' Students' Society of Edinburgh met on April 27th and agreed to form a Society for the Advancement in Knowledge of the Profession of Quantity Surveying by increasing the facilities for study and intercourse. The following office-bearers were elected:—Hon. president, A. K. Smith; president, W. Y. Carrick; vice-presidents, J. F. Knot and J. Webster; secretary, W. Scott; and treasurer, J. Storie.

Obituary.

Mr. James Greig, architect, of Aberdeen died last week at the age of thirty-six years. After being educated at the Grammar School, Mr. James Greig served his apprenticeship with Messrs. Ellis & Wilson, architects, Aberdeen, but afterwards went into the employment of Messrs. Jenkins & Marr, architects and civil engineers. Ill-health, however, compelled him to seek a warmer climate, and he went to Australia, where he remained for two or two years. On his return home he again went into the employment of Messrs. Jenkins & Marr, to whom he became head draughtsman.



DESIGN FOR LIVERPOOL CATHEDRAL BY MALCOLM STARK.

Builders' Notes.

The New Board Schools, Canterbury, have been supplied by Messrs. E. H. Shorland & Brother, of Manchester, with their patent Manchester grates.

The Sunderland Building Trade Dispute between the builders and bricklayers has been amicably settled, both sides having withdrawn their demands.

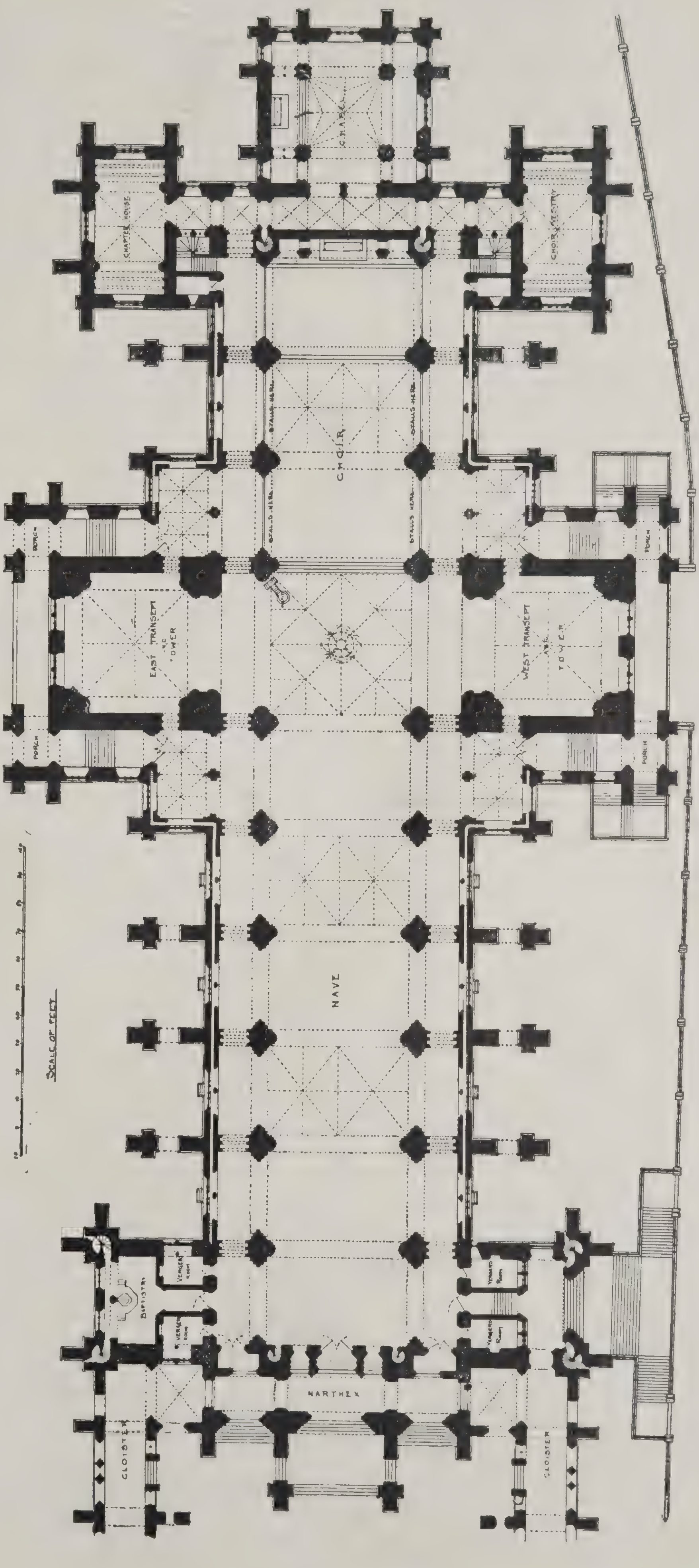
The new Police Station, Amlwch, has recently been fitted with the latest improved improved "small tube" hot-water heating apparatus by Messrs. John King, Ltd., engineers, Liverpool, who have employed their economical coil heater.

A New Varnish.—Messrs. John Mathews & Co., of Hatton Garden Works, Liverpool, have introduced a new oak varnish, made of the best materials, and lacking only the paleness of the higher-priced article. But though dark in appearance, it is not dark in use, and, save, of course, for employment on white or enamel surfaces, is claimed to fill every purpose as well as the costlier varnishes. The new varnish is made up in decorated tins, and is sold at 6s. 6d. per gallon, delivered free.

The recent Ottawa Fire was not so extensive as the Ottawa-Hull conflagration of April 26th, 1900. The district which has been practically devastated is one of those which were burnt out three years ago, and, apart from the lumber-yards, was covered principally by working-class houses. The municipality had forbidden the re-erection of frame-houses (timber), and most of the houses which have now been burnt were "brick encased"—namely, timber with an outside covering of bricks—roofed with shingles. As there were large lumber-yards to the north, south and west, the dangers of a fire in the district were very serious.

Fireproof Floors.—The Edinburgh Fever Hospital, which was opened by the King and Queen, is the largest and probably the most up-to-date fever hospital in Great Britain. It is said to have cost nearly half a million, and has been over five years in erection. An important detail in construction are the fireproof floors and ceilings, which cover over four acres and are of steel and concrete, and sound-proof. From various systems submitted, that of Messrs. Potter & Co., Ltd., of 66, Victoria Street, London, was selected. The floors, &c., occupied four years in construction, and on completion the architect wrote: "I have pleasure in stating that the work itself and your method in dealing therewith have been to my entire satisfaction." Mr. Potter was for many years clerk of works to the late Lord Ashburton.

The St. Helen's Building Dispute has been referred to the arbitration of Judge Shand, of the Liverpool and St. Helen's County Courts. The Bricklayers' Society claimed that they were entitled to walking time if the job at which they were employed was more than half a mile from their employer's yard or place of business. Judge Shand said he understood his duty was to construe the rules as they stood, and his award is as follows:—(1) The word "country" in rule 6 of the working rules means the district lying outside and beyond the boundaries of the borough of St. Helen's. (2) The operatives are not entitled to walking time within the borough of St. Helen's from St. Helen's employers assessed by the Corporation of St. Helen's. (3) A workman is not entitled to walking time if he voluntarily applies for work on a job. The award altogether upsets the practice for years past observed in regard to walking time, and the Bricklayers' Society will doubtless give immediate notice for a revision or reconstruction of the whole of the rules under which they work.



DESIGN FOR LIVERPOOL CATHEDRAL PLACED FIRST BY THE ASSESSORS; GROUND PLAN. G. GILBERT SCOTT, ARCHITECT.

S.K. EXAMINATIONS, 1903.

BUILDING CONSTRUCTION: Advanced Stage.

[The questions and answers in the Elementary Stage were published in our last issue. Questions marked with an asterisk have accompanying diagrams. The examination in this subject lasts for four hours. You may not answer more than six questions.]

21. What is quicklime, and how is it produced? Use such terms as you think would be intelligible to a workman familiar with the handling of lime and plaster-of-Paris, and describe (*a*) what happens when water is applied in quicklime, (*b*) what happens when plaster-of-Paris is mixed with water—to be used for casts: giving the best rational explanation you can of the actions. (24)

Quicklime is burnt limestone. The limestone is broken to a suitable gauge (when the limestone used is chalk it is burnt in fairly large lumps); it is placed in a kiln with fuel; the fuel is lighted by burning fuel in the "eyes" at the bottom of the kiln, and the heat is kept up till the limestone is sufficiently burnt. Limestone is sufficiently burnt when the resulting quicklime will slake to a paste when water is added to it (or, if the student knows some chemistry, quicklime is an oxide of calcium, CaO, together with small quantities of other substances. Limestone, which is mainly $CaCO_3$, is heated in a kiln sufficiently to drive off CO_2, when $CaCO_3$ becomes CaO). (*a*) The quicklime becomes hot and slakes, that is, it falls to dust, or if sufficient water is used it becomes a milk or paste [or the oxide becomes a hydrated oxide, $Ca(OH)_2$]. The applied water combines chemically, forming a new compound disturbing and breaking up the structure of the pieces of quicklime. (*b*) The plaster mixes with the water to form a paste, but it soon sets solid, readily taking the shape of the mould in which it is placed. Plaster-of-Paris results when water of crystallization is driven off from gypsum by heat. It sets by taking water to itself again, which enables it to recrystallize.

22. You have a special kind of timber from which to take flooring joists. The formula

$$\Delta = k\frac{wL^4}{bd^3}$$

expresses a law, where Δ stands for the drop or deflection at the centre, *w* the load per unit of length, *L* the length between the supports or bearings, *b* the breadth or thickness, *d* the depth. Describe an experiment (using a piece of the timber and making use of bricks for loads, &c.) by which you can determine *k*. (24)

See note to question 24.

Take a piece of the timber (fairly uniform and straight grained), say 6in. wide and 1in. thick, long enough to rest upon two bricks 6ft. apart. Load the span with bricks, on edge and not touching one another, placed symmetrically. Measure the deflection at the centre caused by the load; weigh the bricks per unit of length. We now have Δ and *w*; we know *L*, *b* and *d*; and substituting these values in the equation, we find the value of *k*.

23. Assuming that you have made the experiment of the previous question, and that you have found *k* to be ·000000084 (the units being foot and hundredweight), what is the stress per unit of cross-sectional area on the outer fibres at the cross-section of greatest bending moment:
$L = 20$ft., $b = \frac{1}{6}$ft., $\Delta = \cdot05$ft., $w = 1\cdot25$ cwt.? (36)

See note to question 24.

From question 22,

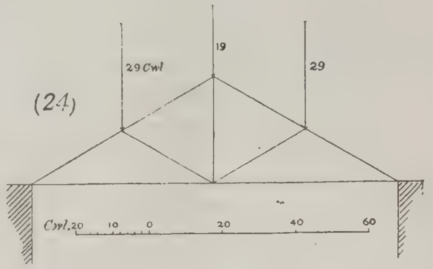
$$d^3 = \frac{b\Delta}{kwL^4} = \cdot496.$$

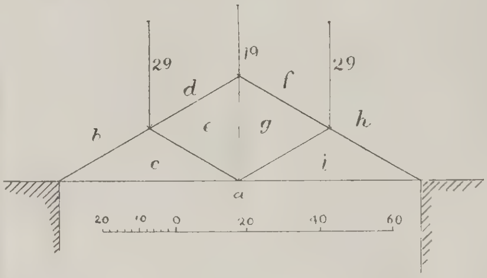
Take the cube root of ·496 (by the tables): it is ·792, $d = \cdot792$. The bending moment at the middle of the beam = 62·5, and this is resisted by $\frac{bd^2}{6}p$, where *p* is the stress per unit of area on the outer fibres (see BUILDERS' JOURNAL, November 13th, 1901, p. 237). $p = \frac{36 \times 62\cdot5}{\cdot792^2} = 351\cdot5$.

*24. Draw the stress diagram for the roof-truss loaded as shown. (29)

(NOTE.—A candidate can obtain marks for not more than two of the three questions, Nos. 22, 23 and 24.)

See illustration below.





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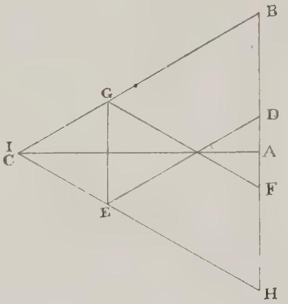


25. Answer only one of the following, (*a*) or (*b*):—

(*a*) Bricks (9in. by 4½in. by 3in.) cost 35s. a thousand; Portland cement costs 3s. 6d. a bushel; sand costs 2½d. a bushel (all as delivered on the works). What is the cost for these materials for a cub. yd. of two-brick wall (mortar, 1 of cement to 3 of sand, joints to show ½in. thick) (twenty-one bushels in 1 cub. yd.)? (33)

(*b*) Bricklayers' wages are 1s. an hour, attendants' wages 6d. an hour; for plain walling, 16ft. to 30ft. over ground, give a reasonable proportion between cost for bricklaying and cost for attendance. Including both items, what is a fair cost per cub. yd. for workmanship? What other items of expenditure should be charged to the brickwork? Give reasons for your proportion and estimate. (33)

(*a*) Assume the bricks to have no frog: size of each brick plus the mortar is 9¼in. by 4¾in. by 3½in. = 131·8 cub. in.; size of a brick = 114·75 cub. in. Mortar for each brick = 17·05 cub. in. Cubic inches in 1 cub. yd. = 46656. Number of bricks in a cub. yd. (at 131·8) = 354 nearly. 354 by 17 = 6018 cub. in. = mortar in a cub. yd. In 8 cub. in. mortar there are 9 cub. in. of sand. In a cub. yd. of brickwork there are—

	s.	d.
3 bushels of sand at 2½d. -	0	7½
1 bushel of cement - -	3	6
354 bricks, say - - -	12	5
	16	6½

(*b*) *One* bricklayer and *two* labourers five hours to build 1 cub. yd.: cost 10s. a cub. yd. Scaffolding, use of tools, shovels, hods, mortar boards, besides supervision, timekeeper, pay clerk, &c.—proportions of the cost.

26. In towns where ashlar masonry is common the lintels to window and door-openings, though of excellent stone, are seen to be in very many cases broken across; explain the cause of this. How might this fracture of lintels be prevented? (24)

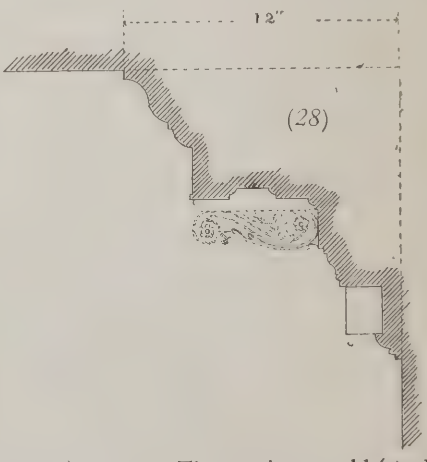
It will be seen on examination that a lintel is held at each end tightly gripped between the head of the reveal and the wall over, so that on the slightest settlement of the building the lintel must break. Either set the lintels with splays on skewbacks, or provide for their being kept loose in the wall till all settlement has taken place.

27. Draw (*a*) the elevation, (*b*) a vertical cross-section at the centre, and (*c*) a half horizontal cross-section (just over the grate) of a good register grate fireplace to the scale of ⅛. How is the fireblock back to be renewed? How is the chimney to be swept and the soot cleared away? (33)

See illustration. A register grate should stand simply on the hearth, but in such a way that it will bear at the edge (sides and top) to make a close joint. It should be easily lifted forward to have the chimney swept or to remove any soot that may fall down and lie between the grate and the back of the recess, or to have the fireblock renewed.

*28. A cornice of the cross-section shown is to be formed round the ceiling of a room: describe the complete operations (omit the making of modillions and their attachment, also the finishing of the soffit): describe the materials used: describe moulds, screeds, rules and tools used, and modes of using them. How are the dentils made and attached? Describe the working of a mitre. (36)

The foreman plasterer instructs the carpenter or joiner to put up brackets to give space for laths and cornice stuff. When walls and ceiling are first coated the lathing or the brackets is also first coated with gauged coarse stuff. Walls and ceiling being floated and fairly dry, *screeds* are adjusted on ceiling and walls on which the running mould shall run true. Running *rules* are fixed to the walls; stuck with gauged putty; nailed; supported with bobs of gauged putty. The running mould (stock, slipper, stay) is fitted with a muffle plate on the stock; the cornice is roughed out in gauged coarse stuff to the lines of the muffle plate. The muffle plate is removed and the true



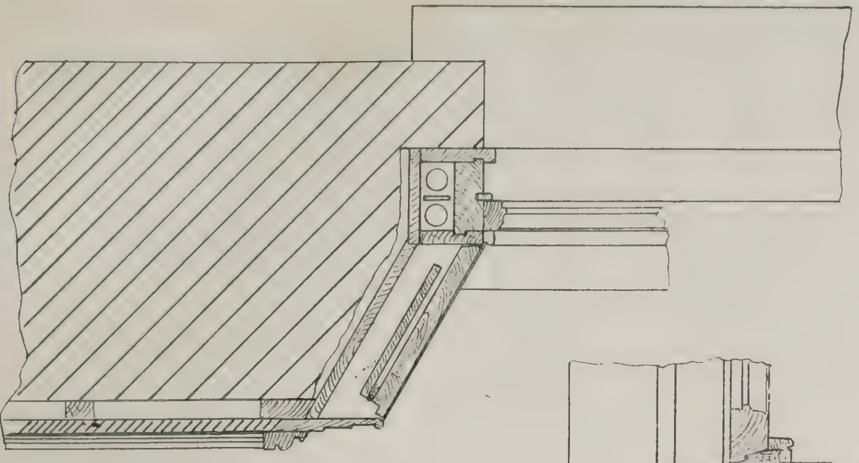
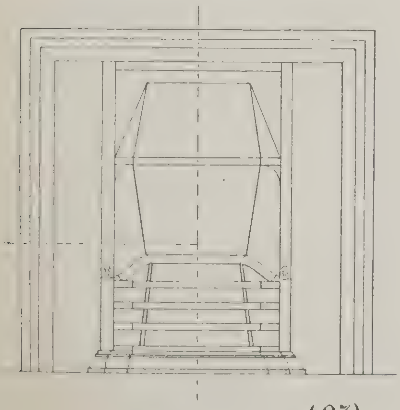


plate put on in place of it (plate of sheet-zinc cut truly to profile of cornice). Plaster-of-Paris is placed on the clean mortar-board; it is wet and mixed with lime-putty; for this rather heavy cornice two men may be at the running mould and two men laying on; there will be a plasterer at the board and a labourer attending with fresh putty, &c.

Dentils are rectangular blocks; they are conveniently made between square plates of zinc set in saw-cuts in two pieces of cleaned battens; the cells so formed are filled with gauged putty; this sets, the boards are removed, and the dentils are found separated by the pieces of zinc (the zinc and boards should be oiled); dentils are attached in the groove made for them by sticking them on with thin gauged putty; a mitre is made by working the surface formed by the running mould into the angle with a thin straight-edge of steel about 3in. wide, pointed at one end. Various small steel tools with thin flexible points are used to work the small details at the mitres (called mitring tools).

29. A right circular cone roof, over a lantern, is 8ft. in diameter at the eave; it is 3ft. high (from base at eave to vertex); it is to be covered with copper plates in the manner of slating: they are trimmed and bent to fit on. The margin is 6in., the lap is 3in.; the apex is finished with a conical cap of sheet-copper 8in. diameter at the base; the sheet-copper weighs 3lbs. per super. ft.; omitting nails, what is the total weight of copper on the roof? (33)

The area of the cone is 20π; for two thicknesses of copper it will be $40\pi = 125·664$. But there will be nine rings, each 3in. wide, of three thicknesses (the laps); the average ring is 1·571; the area of nine rings is 14·139.



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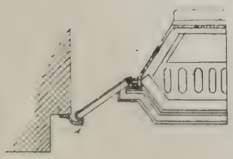
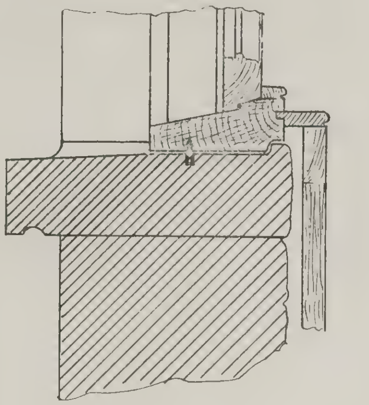




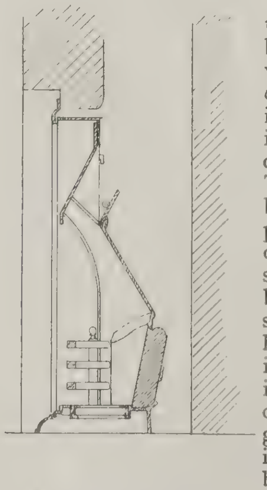
The area of the cap is 62·83 sq. in. = ·436 sq. ft.

Two thicknesses of copper -	125·664
Extra for rings - - -	14·139
" " cap - - - -	·436
Square feet - - -	140·239
	3
Weight of copper - -	420·72 lbs.

This takes no account of the extra area, owing to the thickness of copper plates being added to the sheeted cone.

30. Draw carefully to the scale of $\frac{1}{8}$ the horizontal cross-section of a fully-trimmed window through one jamb and reveal. The wall is of stone, ashlar face; reveal 6in. deep; wall 2ft. thick, battened (or stoothed). Show jamb-lining, three-faced architrave, folding shutters (windows about 4ft. wide), ground, lathing and plaster. Sketch to the scale of $\frac{1}{6}$ cross-section through sash bottom rail, oak sill and stone sill. If you adopt a water-bar, explain how you prevent water passing inwards at the ends of the oak sill. (28)

See illustration above.



It is of great importance that the job shall be weather-tight at the window sills. I have drawn the oak sill showing a water-bar, though it is unnecessary in the circumstances shown. There appears to me to be too general economy practised in this matter of stone window-sills as shown by drawings in books. I prefer window sills dressed as shown, having the oak sill set into them well-bedded in white lead. I can only account for the general apparent scamping of this work by the books being compiled by men living in districts where stones for thorough sills are not easily to be had. I do not depend on a water-bar, and therefore I need to take no precautions at the ends.

31. Answer only one of the following, (*a*) or (*b*):—

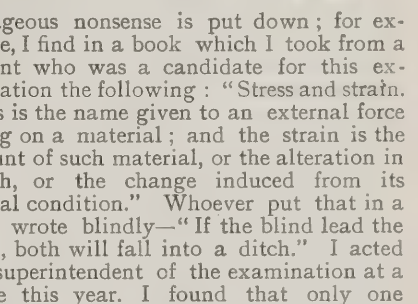
(*a*) Sheet-lead which is repeatedly treated to sudden dashes of warm (or hot) water wrinkles permanently in a remarkable manner (seen when a scullery or pantry sink is, as is occasionally done, lined with sheet lead); explain this. (24)

(*b*) Sketch neatly and cleanly a longitudinal section of a good screw-down bib-cock. (24)

(*a*) Lead has comparatively poor conductivity and its elasticity of shape is also poor; it has also a comparatively large coefficient of expansion. When sheet-lead is subjected to a dash of hot water the surface washed by the water expands before the heat reaches the under-surface, with the result that the metal of the top-surface is strained beyond the elastic limits of the material—it flows; again, when hot water is poured on a particular part this part expands and takes a pot or dome shape. Repeated treatment of this kind results in the wrinkling observed.

See illustration. This sketch is not given as showing the *best* form of screw-down bib-cock: it is a common kind. A screw, not shown in the section, prevents the joint at A from unscrewing when the cock is opened (the spindle may be tight in the stuffing-box). Lord Kelvin's form of screw-down cock is familiar. Students should not be content to know the action of an appliance of this kind; they should know why screw-down cocks are used in preference to plug-cocks, which are simpler, quicker in use and quite satisfactory in regard to water-tightness. Useful information of this kind is not usually given in text-books for teaching building construction. I find in many cases the most outrageous nonsense is put down; for example, I find in a book which I took from a student who was a candidate for this examination the following: "Stress and strain. Stress is the name given to an external force acting on a material; and the strain is the amount of such material, or the alteration in length, or the change induced from its normal condition." Whoever put that in a book wrote blindly—"If the blind lead the blind, both will fall into a ditch." I acted as a superintendent of the examination at a centre this year. I found that only one candidate had brought Indian ink and drawing instruments, and these had to be handed round for the tracing questions. Some of the candidates were men attending a university college. I said to them, "Did you not see in the syllabus that you were expected to do tracings in ink?" The only syllabus which they had seen was one in an old edition of Rivington's "Notes." Such carelessness and ignorance on all hands must have unfortunate results. It is quite time to say in these matters, "Wake up, John Bull!"

(31)



*32. Trace neatly in ink the drawing shown (see next page), also the writing and figures. (The Indian ink should be sufficiently thick to give opaque lines suitable for photographic printing; the lines should be well defined, uniform in breadth, having firm unbroken edges; they should neither stop short of nor go beyond the proper points.) (28)

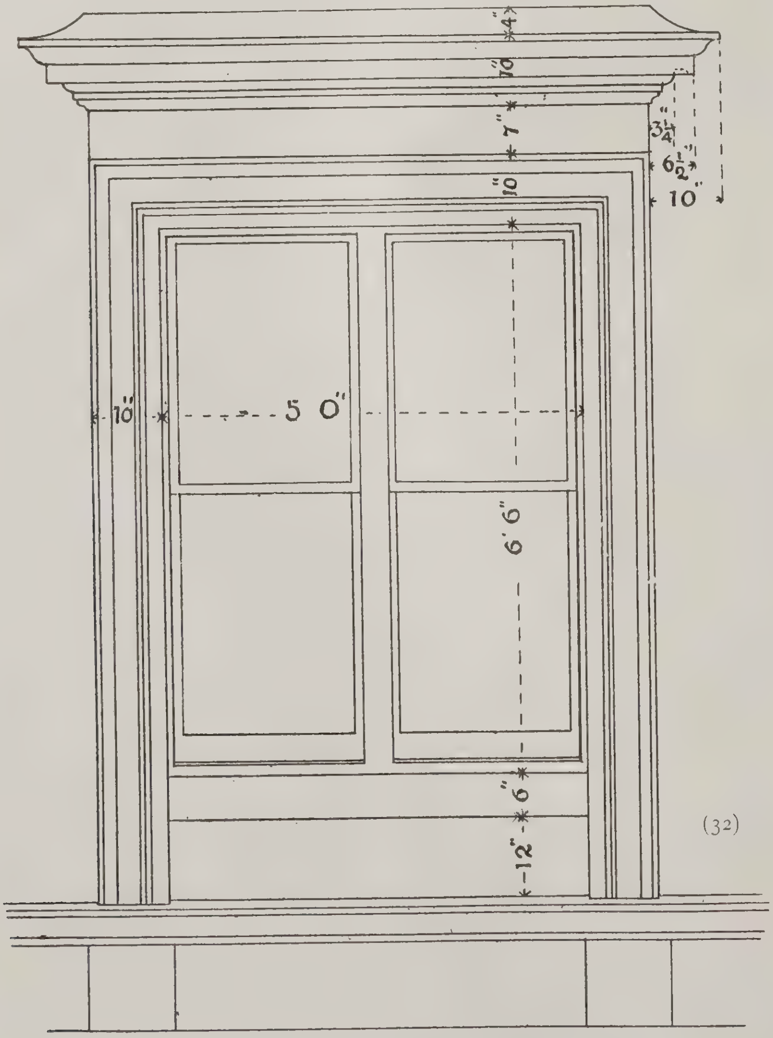
The question sufficiently explains what is required to be done.

[The names "Elementary" and "Advanced" will disappear after this year. In future the stages will be I., II., III. and Honours.]

Law Cases.

St. Anne's Cathedral, Leeds: Right-of-Light Arbitration.—An arbitration enquiry between Mr. Thomas Ambler and the trustees of St. Anne's Cathedral, Leeds, arising out of the alleged damage to light by the erection of a new cathedral in Cookridge Street, necessitated by the intended demolition of the old cathedral for street improvements, was held at Westminster on May 18th, the evidence having been given in Leeds on the previous Monday. The umpire was Mr. Thomas Blashill, the arbitrators being Mr. John Hepper, of Leeds, for the claimant, and Mr. E. Flint, London, for the defendants. The witnesses who were called at the hearing in Leeds for the claimant were Mr. Thomas Winn, surveyor, Leeds; Mr. Charles Gott, architect and civil engineer, Bradford; and Mr. R. Horsfall, architect, Halifax—whose valuations were about £2,700, the amount of the claim; while those who gave evidence on behalf of the defendants were Mr. Charles Fenwick, surveyor; Mr. J. B. Fraser, architect; and Mr. Albert Smith, woollen merchant; all of Leeds—whose figures worked out at about £326. The umpire reserved his award.

"Single" Buildings under the L.B.A.—The case of *Goodchild* v. *Matthews* recently came before the King's Bench Division of the High Court of Justice. It was a case stated by the magistrate of the Marylebone Police Court as to the proper construction of section 77 (1) of the London Building Act, 1894. The appellant was the district surveyor for North Islington and East St. Pancras, and the respondent, a builder, proposed to erect six blocks of flats in a street called West Hill, in St. Pancras, and gave appellant due notice thereof under section 150 of the Act. The appellant served a notice of objection on the ground that the buildings would be in contravention of section 77 (1), which enacts that "buildings shall not be united except where they are wholly in one occupation or are constructed or adapted to be so." The magistrate found that each of the blocks contained its own staircase leading from the basement to the top and had a separate entrance from outside, and that there was a passage under the roofs leading from one end of the blocks to the other. The plans showed that the walls dividing the blocks were not carried up through the roof, but were of sufficient thickness to satisfy the requirements of the Act in relation to the thickness of party walls. The appellant contended that each of these blocks was a separate building, and that the respondent was proposing to unite them by means of the corridor in contravention of section 77 (1). The respondent contended that the whole was a single building containing several sets of flats which, though separate dwellings, were not separate buildings. The magistrate came to the conclusion that what the respondent proposed to erect was one separate building, and not a union of separate buildings under one roof, and that section 77 (1) only applied to the union of buildings which had in the first instance been completely erected as separate structures, and that it did not apply to the union of separate buildings in course of erection for the purpose of transforming them into a single separate structure. From this the present appellant appealed.—The Lord Chief Justice, in giving judgment, said that the surveyor had great powers, which ought to be exercised only when there was a clear breach of the Act. There was not the least doubt as to the proper construction of the section. The findings of the magistrate were justified by the evidence, and he should have come to the same conclusions of fact and law himself. With regard to the arguments of the appellant, he must not be taken to hold that putting a covered way connecting two structures would be a "uniting" within the section, but that the "uniting" was that contemplated in section 77, subsections (2) and (3). The existence of external walls and windows did not necessarily constitute a building. Speaking for himself, and reserving the right to change his opinion when the point again arose, he was of opinion that section 77 (1) referred to the union of two buildings existing at the time of union, and not to an addition to an existing structure. The appeal must be dismissed.—Mr. Justice Wills and Mr. Justice Channell concurred. Leave to appeal was granted.



(32)

Elevation of a Window.

THE FIRE CONGRESS.

Papers to be Read.

THE following are among the papers accepted for consideration and discussion at the International Fire Prevention Congress, convened by the British Fire Prevention Committee, which is to be opened by the Lord Mayor on July 7th:—By G. Edward Atkinson, president of the Boston Manufacturers' Mutual Insurance Co., U.S.A., "The Prevention of Loss by Fire in the United States of America"; by Privy Councillor J. Stubben, late president of the Amalgamated Societies of German Architects and Engineers, late city surveyor of Cologne, "Urban Fire-Protection as influenced by Street Planning and Building Regulations"; by Chief Officer Westphalen, Hamburg City Fire Brigade, "The Latest Experience in Warehouse Construction at Hamburg and Bremen"; by Professor Woolson, Columbia University, New York, "Fire-retarding Wood"; by Chief Officer Meier, City Fire Brigade, Amsterdam, "The Necessary Development of Fire-Alarm Systems"; by Professor Medem, University of Greifswald, "Spontaneous Combustion"; by A. Dittman, Chief Officer, Bremen Fire Brigade, "The Influence of the Fire Service on Fire Prevention"; by A Goldoni, Chief Officer, Fire Brigade, Milan, "Fire Survey and Fire Watches in Theatres"; by Gorham Dana, Inspector, Underwriters' Bureau, New England, Boston, U.S.A., "The Care of Private Fire Appliances"; by Charles Hexamer, president of the National Fire-Protection Association, U.S.A., "The Principles of Fire Insurance in America"; by W. H. Stratton, chairman of Executive of the National Fire-Protection Association, U.S.A., "Fire Hazards in America from an Insurance Point of View"; by W. H. Merrill, junr., The Underwriters' Laboratories, Chicago, "The Testing Principles adopted at the National Fire-Prevention Laboratory of Chicago"; by Crown Surveyor Jaffé, Berlin, "The Testing Principles adopted at the Royal Technical Research Laboratory, Charlottenburg, and at other Fire Tests in Germany"; by Chief Officer Welsch, City Fire Brigade, Ghent, "The Necessity of Systematising Testing Operations as based on Belgian Experience." All application regarding the programme of the Congress and the arrangements made for visitors to the Metropolis should be made to the hon. general secretary, Mr. Ellis Marsland, 1, Waterloo Place, S.W.

In the Royal Hospital for Incurables at Putney a tablet has just been placed to the memory of Dr. Thomas James Woodhouse. It is the work of Mr. Harry Hems, of Exeter.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

Aylesbury.—For additions to Literary Institute. Mr. Fred Taylor, A.R.I.B.A., architect, Aylesbury:—

Hunt & Son, High Wycombe	£1,373	0	0
G. Darlington, Amersham	1,327	0	0
Townsend & Co., London	1,304	17	10
H. Fincher, Tring	1,290	0	0
Webster & Cannon, Aylesbury	1,280	0	0
Mayne & Son, Aylesbury	1,260	0	0
J. Hodges, Edgware	1,232	0	0
G. & T. Cannon, Aylesbury	1,197	0	0

Bristol.—For the erection of new warehouse and offices in Castle Green, for Messrs. Habgood Brothers, metal merchants. Mr. Thomas Scammell, architect, 1, St. Stephen Street, Bristol:—

W. Church	£2,219	J. Perkins & Son	£2,122
J. James	2,200	F. Chown	2,000
Eastabrook & Sons	2,190	G Humphries	1,980
Jones & Hill	2,152	Wilkins & Gosling*	1,880

* Accepted. [All of Bristol.]

Eastbourne.—For the erection of a fire station, Gover Road, for the Corporation. Mr. P. A. Robson, architect, 9, Bridge Street, Westminster, S.W.:—

M. Hookham	£5,059	0
Martin, Wells & Co	4,937	15
Cornwell & Son	4,684	5
F. G. Minter	4,657	0
J. Martin	4,495	0
J. Longley	4,489	0
W. & E. Noakes	4,150	0

Holywell (Flints).—For the construction of a reservoir, supplying and laying of cast-iron pipes, supplying and fixing of pillar fountains, hydrants, valves, &c., for the Holywell Rural District Council. Mr. C. A. Atkinson, engineer, 11 Tithebarn Street, Liverpool:—

J. Jones, Flints	£4,600	0	0
T. Rowlands No thwich	3,776	11	0
W. Jowett, Prescot, Lancs.	3,450	6	4
H. Hughes, Holywell	3,327	12	10
Bennie & Thompson, Warrington	3,133	0	11
R. A. Crowe, Deansgate, Manchester	3,111	14	6
Hughes & Rowlands, Colwyn Bay	2,884	16	0
H. Shardlow, Nottingham	2,860	0	0
W. D. Simmons & Son,* Glan Lyn, Gwersylt, Wrexham	2,671	0	3

* Accepted.

London.—For works at Dunt's Hill School, for the London School Board. Mr. T. J. Bailey, architect to the Board:—

R. A. Jewell	£1,691	E. Triggs	£1,535
J. Marsland & Sons	1,620	J. Garrett & Son	1,46[illegible]
General Builders, Ltd.	1,597	Lathey Brothers	1,407
Whitehead & Co., Ltd.	1,545	W. Hammond*	1,383

* Recommended for acceptance.

London.—For the erection of a special school (mentally defective) at Sussex Road, for the London School Board. Mr. T. J. Bailey, architect to the Board:—

F. & H. F. Higgs	£3,335	0	0
W. Downs	3,195	0	0
T. D. Leng	3,163	0	0
E. Triggs	3,127	0	0
Johnson & Co.	3,122	0	0
R. A. Jewell	3,038	16	1
J. Smith & Sons, Ltd.	3,022	0	0
Martin, Wells & Co., Ltd.	3,012	0	0
E. P. Bulled & Co.	2,997	0	0
J. Garrett & Son	2,951	0	0
Rice & Son	2,951	0	0
Lathey Brothers	2,895	0	0
Stimpson & Co.	2,867	0	0
J. Marsland & Sons	2,840	0	0
J. & C. Bowyer	2,839	0	0
W. J. Mitchell & Son*	2,799	0	0

* Recommended for acceptance.

London.—For the enlargement of Swaffield Road School, for the London School Board Mr. T. J. Bailey, architect to the Board:—

F. & H. F. Higgs	3,210	0	0
W Downs	3,117	0	0
F. G. Minter	3,090	0	0
Martin, Wells & Co., Ltd.	3,043	0	0
R. A. Jewell	3,027	18	5
Marchant & Hirst	2,850	0	0
E. Triggs	2,781	0	0
Lathey Brothers	2,775	0	0
J. & C. Bowyer	2,727	0	0
Rice & Son	2,694	0	0
J. Appleby & Sons	2 666	0	0
Treasure & Son	2,557	0	0
J. & M. Patrick	2,465	0	0
J. Garrett & Son*	2,457	0	0

* Recommended for accceptance.

London.—For relaying the old soil drains and part surface water, and forming the necessary access with several connections to the existing trough latrines; also providing additional lavatory accommodation for girls, at Haselrigge Road School, for the London School Board. Mr. T. J. Bailey, architect to the Board:—

Sanitary Lead-lining and Pipe-bending Co., Ltd.	£1,776	6	0
Rice & Son	1,657	0	0
W. Hammond	1,627	0	0
E. Triggs	1,626	0	0
Lathey Brothers	1,619	0	0
R. P. Beattie	1,587	7	6
Maxwell Brothers, Ltd.	1,580	0	0
J. & M. Patrick	1,577	0	0
J. & C. Bowyer	1,497	0	0
J. Peattie	1,491	0	0
J. W. Falkner & Sons	1,488	0	0
A. Porter	£1,485	0	0
H. Leney & Son*	1,467	0	0

* Recommended for acceptance.

London.—For the enlargement and improvements at Pope Street School, for the London School Board. Mr. T. J. Bailey, architect to the Board:—

Macey & Sons, Ltd.	£13,517	J. Garrett & Son	£11,881
A. Porter	13,251	Martin, Wells & Co., Ltd.	11,697
F. & H. F. Higgs	13,123	Thomas & Edge	11,492
J. Longley & Co.	12,953	J. Marsland & Sons	11,419
E. Lawrence & Sons	12.896	J. Appleby & Sons	11,200
J. Smith & Sons, Ltd.	12,667	T. D. Leng	11.067
General Builders, Ltd.	12,573	G. E. Wallis & Sons	10.943
		J. & C. Bowyer*	10,787

* Recommended for acceptance.

London.—For works at Deansfield Road School, for the London School Board. Mr. T. J. Bailey, architect to the Board:—

Rice & Son	£5,846	T. L. Green	£4,889
Thomas & Edge	5,106	J. Smith & Sons, Ltd.	4,731
Marchant & Hirst	5,075	E. Proctor & Son	4,420
H. Groves	5,030	E. P. Bulled & Co.	4,300
T. D. Leng	4,962	J. & C. Bowyer*	4,160

* Recommended for acceptance.

London, S.E.—For the erection of public baths and washhouses, Old Kent Road, for the Borough of Camberwell. Mr. E. Harding Payne, architect, 11, John Street, Bedford Row, W.C. Quantities by Mr. R. C. Gleed:—

		A.
W Lawrence & Son	£48,300	£2,800
Balaam Brothers	45,000	1,100
B. Nightingale	44.500	2,200
Shelbourne & Co.	42, 10	1,723
Godson & Sons	42 354	736
W. J. Maddison	42,329	1,256
Shillitoe & Son	42,270	970
E. Lawrence & Son	41,975	998
Battley, Sons & Holness	41,757	1,119
C. Ansell	41,500	999
Jones & Son	41,035	—
H. L. Holloway	41,000	955
Holliday & Greenwood	40,644	1,032
Pattinson & Sons	40,133	1,068
Greenwood, Ltd.	40,086	1,000
W. Wallis	39,999	1,500
King & Son	39.792	1,266
Galbraith Brothers	39,675	1,426
Kilby & Gayford	39 633	1,220
A. N. Coles,* Plymouth	37.433	1,630

[A. Extra for Portland stone.] * Accepted provisionally.

London, S.E.—For underground convenience to be constructed in front of the new baths and washhouses in the Old Kent Road, for the Camberwell Borough Council:—

W. Lawrence & Son, N.	£4,400
Battley, Sons & Holness, S.E.	3,997
E. Lawrence & Son, N.	3,993
H. L. Holloway, Deptford, S.E.	3,900
G. Jennings, Ltd., London, S.E.	3 871
G. Godson & Sons, Kilburn Lane, N.W.	3,863
J. Shelbourne & Co., E.C.	3,812
J. Shillitoe & Son, Bury St. Edmunds	3,791
J. Greenwood, Ltd., E.C.	3,781
W. J. Maddison, N.	3,729
A. N. Coles,* High Street, Plymouth	3 600
B. Finch & Co., Lambeth, S.E.	3 3 8

* Recommended for acceptance.

Middlewich, Cheshire.—For the erection of banking premises, Middlewich, Cheshire, for the Birmingham District & Counties Banking Co., Ltd. Mr. Ernest E. Shepherd, architect, Bond Gate, Nuneaton:—

S. Manley	£2,598	0	0
Micklewright & Sons	2,519	0	0
Thomas Smith & Son	2,297	15	8
Birchall Brothers*	2,070	0	0

* Accepted.

London, S.E.—For the erection of higher elementary school, Blackheath Road, Greenwich, for the London School Board. Mr. T. J. Bailey, architect to the Board:—

Thomas & Edge	£12,900	J. Marsland & Sons	11,715
G. Munday & Sons	12,603	Martin, Wells & Co., Ltd.	11.617
W. Gregor & Son	12,521	Johnson & Co.	11,578
T. L. Green	12,383	J. Appleby & Sons	11.544
Holliday & Greenwood, Ltd.	12,207	J. & M. Patrick	11,455
Lathey Brothers	12,141	J. Garret & Son	11,332
F. & H. F Higgs	12,135	J. & C. Bowyer	10,988
W. J. Mitchell & Son	11,566	J. Longley & Co,* Crawley	10,987
W. Downs	11,923		
J. Smith & Sons, Ltd.	11,809		

* Recommended for acceptance.

London, S.W.—For the erection of warehouse in Vera Street, Clapham, S.W., for Mr. E. W. Bonehamper. Mr. Harry J Capell, architect, 20, Lynett Avenue, Clapham Common, S.W.:—

G. Garner	£3,181	12
H. T. Bishop	2,872	0
Turtle & Appleton	2,320	0
Garrett & Son	2,293	0
Somerford & Son,* Clapham	1,988	0

* Accepted.

London, W.—For the erection of the central schools, for the Acton School Board. Messrs. Edward Monson & Sons, architects, Acton Vale, W., and 22, Buckingham Street, Adelphi, W.C. Quantities by Mr. F. T. W. Miller, Dartmouth Street, Queen Anne's Gate, S.W.:—

Barker & Co., Kensington, W.	£31,500
B. E. Nightingale, S.E.	29,300
Hunt & Son, High Wycombe	28,967
Godson & Sons, W.	28,846
Wall & Co, Kentish Town, N.W.	28,647
Kellett & Sons, Willesden Junction, N.W.	28,100
Patman & Fotheringham, W.C.	23,000
Lole & Lightfoot, Chelsea, S.W.	27,957
Dorey & Co., Brentford, W.	27,300
Braid, Pater & Co, Cheapside, E.C.	27,000
W. Wallis, Balham, S.W.	26,999
Dearing & Son, W.	26,973
H. Lovatt, West Kensington, W.	26,750
Gough & Co., Hendon, N.W.	£26,734
W. Blackburn, Chiswick, W.	26,650
W. J. Renshaw, Putney, S.W.	26,296
Galbraith Brothers, Camberwell Green, S.E.	26,295
Hadley & Sons, Old Hill, Staffs	26,000
Willcock & Co.* Wolverhampton	25,685

[Architects' estimate, £27.150.]

* Accepted subject to the approval of the Board of Education.

Londonderry.—For building extension to the electric light station, for the Corporation. Mr. Daniel Conroy, architect, 21, Shipquay Street, Londonderry:—

Smyth Brothers, Waterside	£6 374
Shannon & Routledge, Fountain Street	7,532
M. Sweeney, Strand Road	5,970
R. Colhoun,* Strand Road	5,500

* Accepted.

Norwich.—For erection, completion and maintenance for six months of two blocks of workmen's dwellings in Angel Road, one of such blocks to comprise twelve dwellings arranged in flats, the other block to comprise four self-contained dwellings, for the Corporation. Mr. Arthur E. Collins, M.I.C.E., city engineer, architect and surveyor:—

T. H. Gill	£2,167	0	0
F. R. Hipperson	1,981	4	10
J. Youngs & Son	1.950	0	0
J. S. Smith	1,875	0	0
Burton & Son	1,838	12	4
W. J. Hannant	1,831	0	0
A. C. Taylor	1,830	0	0
Lincoln & Bush	1,822	0	0
S. Chapman & Son	1,799	0	0
Southgate Brothers	1,770	0	0
H. C. Greengrass	1,740	0	0
A. D. Boddy & Son*	1,730	0	3

* Accepted. [All of Norwich.]

Scarborough.—For the construction of the approach road to the Marine Drive, including concrete viaduct, harbour walls, slipway, drainage, &c., for the Scarborough Town Council. Messrs. E. T. Beard, A.M.I.C.E., F.S.I., and Harry W. Smith, A.M.I.C.E., engineers, Town Hall, Scarborough:—

Dixon & Co., Bradford	£15,990	0	0
H. Arnold & Son, Doncaster	14,750	0	0
Parker & Sharp, York	12,451	3	10
R. C. Brebner & Co., Edinburgh	11,623	7	8
J. Brunton, Hull	11,617	16	9
A. Graham & Son, Huddersfield	11,170	0	0
A. Brunton & Son, Hull	11,083	11	4
G. Bell, Manchester	10,143	12	2
J. Jaram & Son, Scarborough	10,005	0	0
G. K. Waghorn, Gilberdike, Yorks.	9,670	0	0
B. Cooke & Co.,* 16, Victoria Street, Westminster, S.W.	8,500	0	0

* Accepted.

Shoeburyness.—For the erection of an infants' school (to accommodate 200 children), together with the necessary offices, &c., at Richmond Avenue, Shoeburyness, for the South Shoebury School Board. Messrs. Burles & Harris, architects, Clarence Chambers, Southend-on-Sea:—

G. Ventris, Shoeburyness	£4,630	0
J. Dowsett, Southend-on-Sea	3 998	15
Dowsing & Davis, Romford	3,930	0
A. J. Golding, Southend-on-Sea	3,875	0
Whur & Campkin, Southend-on-Sea	3 850	0
Dupont & Co., Southend-on-Sea	3,785	0
F. & E. Davey, Ltd., Southend-on-Sea.	3,779	0
S. E. Moss, Southend-on-Sea	3,655	10
Davis & Leaney, Southend-on-Sea	3,649	0
A. R. Whur, Southend-on-Sea	3,590	0
J. Alp, Shoeburyness	3,496	0
E. West, Chelmsford	3,479	0
W. E. Davey, Southend-on-Sea	3,244	0
Harrris & Rowe,* Ltd., Shoeburyness.	3,198	0

* Accepted.

Sidmouth (Devon).—For alterations and additions to the Knowle Hotel, Sidmouth, Devonshire. Mr. R. S. Balfour, A.R.I.B.B.A., architect:—

Kilby & Gayford, London	£14,126
Holloway Brothers, London	13,716
Cowlin & Sons, Bristol.	13,300
J. Marsland & Sons, London	13,295
Stephens, Bastow & Co., Ltd., Bristol	12,886
J. Chessum & Sons, London	12,880
Stephens & Sons,* Exeter	10,770
W. E. Blake, Plymouth	10.626

* Accepted.

Tamworth.—For the erection of a new infirmary at the workhouse, for the Guardians. Mr. J. W. Godderidge, architect, 4, Bolebridge Street, Tamworth:—

J. Evans, Nottingham	£10,200
W. Shelhorne, Stafford	9,565
Kelley & Sons, Coventry	9 123
H. Gibbs, King's Heath	8,976
Lowe & Sons, Burton	8,950
J. Herbert, Wolverhampton	8,797
E. Williams,* Tamworth	8,792
Gowing & Ingram, Birmingham	8,779
J. Dallow, Blackheath	8,770
T. Mason, Hednesford	8,565
Radford & Greaves, Derby	8,450

* Accepted.

Wimbledon.—For the erection of seven pairs of semi-detached houses in Wilton Crescent, Wimbledon, for the Merton Park Estate Co., Ltd. Mr. H. G. Quartermain, architect, Merton Park, Surrey. Quantities by Mr. W. W. Dearle, Broad Street House, New Broad Street, E.C.:—

W. Johnson & Co., Ltd.	£14,490
Bulled & Co.	14,307
D. Steward & Son	14,200
Smith & Son, Ltd.	13,397
Holliday & Greenwood, Ltd.	13,250
Garrett & Son	12,978
W. H. Lordon & Son	12,222
J. Burges & Sons,* Wycliffe Road, Wimbledon	11,200

* Accepted.

Complete List of Contracts Open.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
		BUILDING:		
May	28	Bristol—Sanitary Conveniences	Sanitary and Improvement Committee.	City Engineer, 63 Queen Square, Bristol.
"	28	Croston, Lancs—School	—	W. H. Dinsley, 12 Cleveland Street, Chorley.
"	28	Lurgan, Ireland—Additions, &c., to Barracks	—	Office of Public Works, Dublin.
"	29	Aberaman—Alterations, &c., to Chapel	—	Rev. H. P. Jenkins, 18 Belmont Terrace, Aberaman.
"	29	Belfast—Church Works	—	Graeme-Watt & Tulloch, 77A Victoria Street, Belfast.
"	29	Dudley—Alterations, &c., to Workhouse	Guardians	G. W. Coster, Clerk Union Offices, St. James's Road, Dudley.
"	29	Tenby—Drill Shed	Royal Naval Reserves	Director of Works Department, Admiralty, W.C.
"	29	Thornton, Yorks—Eight Houses	—	M. Hall, 1 Harrison Road, Halifax.
"	29	Warton, Carnforth—Store	Co-operative Society, Ltd.	Society's Registered Office, Carnforth.
"	29	London, E.C.—Bricks, &c.	—	Surveyor, Guildhall, London, E.C.
"	29	Hull—Alterations to Baths	Corporation	J. H. Hirst, City Architect, Town Hall, Hull.
"	29	Stockton-on-Tees—Rebuilding Hotel	J. W. Cameron & Co., Ltd.	J. M. Bottomley, Son & Wellburn, 28 Albert Road, Middlesbrough.
"	30	Purston, near Pontefract—Church	—	Garside & Pennington, Architects, Pontefract.
"	30	Yeovil—Additions, &c., to Hotel	Mitchell Toms & Co., Ltd.	A. W. Yeomans, Architect, Cornhill, Chard.
"	30	Bath—Additions to Electricity Generating Station	Corporation	Kincaid, Waller, Marville & Dawson, 29 Great George Street, Westminster, S.W.
"	30	Fishguard, Pembrokeshire—Additions, &c., to Premises	—	J. P. James, Architect, Tenby.
"	30	Glasgow—Extension of Fish Market	Corporation	A. B. M'Donald, City Engineer, Office of Public Works, City Chambers, Glasgow.
"	30	Perth—Public Washhouse	Town Council	R. M'Killop, Burgh Surveyor, 12 Tay Street, Perth.
"	30	Sheffield—University College Buildings	—	Gibbs & Flockton, 15 St. James's Row, Sheffield.
"	30	Witton Gilbert, Durham—Additions to Church	—	H. T. Gradon, 22 Market Place, Durham.
"	30	Worcester—Rebuilding Bridges	Worcestershire County Council	H. J. Garrett, County Road Surveyor, Shirehall, Worcester.
"	30	Abergavenny—Repairs to Wall	Joint Burials Committee	J. T. Rutherford, Clerk, Town Hall, Abergavenny.
"	30	Petty—Renovation of Church	—	J. Robertson, Architect, 30 Union Street, Inverness.
"	30	Chandler's Ford, Hants—Church	—	H. T. Northcroft, Son & Nicholson, 9 Regent Street, London.
"	30	Wickham Market, Suffolk—Restoration of Spire	—	J. S. Corder, Wimborne House, Ipswich.
"	30	Cwmaman—House and Surgery	Dr. T. Finney	Llewellin, Smith & Davies, Architects, Aberdare.
"	30	Aberffrwd, Mountain Ash—37 Cottages	Mountain Ash Cottage Co., Ltd.	Morgan & Elford, Architects, Mountain Ash.
June	1	Limerick—Fifteen Cottages	Thomond Artizans' Co., Ltd.	J. F. Power, Secretary, Carr Street, Limerick.
"	1	Macclesfield—Laundry, &c.	Guardians	Whittaker & Bradburn, 19 King Edward Street, Macclesfield.
"	1	Bargoed, Wales—Rebuilding Chapel	—	T. Roderick, Architect, Clifton Street, Aberdare.
"	1	Rhymney—Twenty Houses	Buchan Brewery Building Club	T. Roderick, Architect, Glebeland Street, Merthyr.
"	1	Beacon, Camborne—Two Houses	—	J. Barbary, Architect, Dolcoath Road, Camborne.
"	2	London, S.W.—River Wall	Wandsworth Borough Council	Surveyor, 41 High Street, Wandsworth.
"	2	Rhymney (Mon.)—School, &c.	Bedwellty School Board	James & Morgan, Architects, Charles Street Chambers, Cardiff.
"	2	Cleethorpes—Council Offices	Urban District Council	H. C. Scaping, Architect, Court Chambers, Grimsby.
"	2	Hanwell, W.—Sorting Office	Commnrs. of H.M. Works, &c.	J. Wager, H.M. Office of Works, &c., Storey's Gate, S.W.
"	2	Finchley, N.—Sorting Office	Commnrs. of H.M. Works, &c.	J. Wager, H.M. Office of Works, &c., Storey's Gate, S.W.
"	3	Gosforth, Ponteland—Station Buildings, &c.	North-Eastern Railway Co.	W. Bell, Architect, Central Station, Newcastle-on-Tyne.
"	3	Copmanthorpe, Yorks—Station Buildings	North-Eastern Railway Co.	W. Bell, Company's Architect, York.
"	3	Halifax—Four Shops, &c.	—	J. F. Walsh & G. Nicholas, Architects, Museum Chbrs., Halifax.
"	3	London, S.E.—Repointing Brickwork	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
"	3	Newcastle-on-Tyne—Sub-station Buildings	North-Eastern Rly. Co.	W. Bell, Architect, Central Station, Newcastle-on-Tyne.
"	3	Stoke-upon-Trent—Mortuary, &c.	—	C. Lynam, Architect, Stoke.
"	3	York—Station Buildings, &c.	North-Eastern Railway Co.	W. Bell, Architect, Central Station, Newcastle-on-Tyne.
"	3	West Bowling—66 Workmen's Dwellings	Bradford Corporation	F. E. P. Edwards, City Architect, Whitaker Buildings, Brewery Street, Bradford.
"	3	Kirton Holme—Chapel, &c.	—	Mr. Chesman, Wesleyan Chapel, Kirton Holme.
"	3	Bicken, near Donnington—Villa	—	H. Kidd, Kirton
"	3	Ramsgate—Superstructure to Pavilion, &c.	Corporation	S. D. Adshead, 46 Great Russell Street, W.C.
"	4	Merthyr—Extension of Hospital	—	C. M. Davies, 112 High Street, Merthyr Tydfil.
"	6	Aberdare—Alterations, &c., to Police Station	Glamorgan County Council	T. M. Franklen, Clerk, County Offices, Westgate Street, Cardiff.
"	8	Ystradyfodwg—Additions to Masters' House, &c.	School Board	J. Rees, Hillside Cottage, Pentre.
"	8	Ystradyfodwg—Additions to School	School Board	J. Rees, Hillside Cottage, Pentre.
"	8	Hornsey—Workmen's Dwellings	Urban District Council	E. J. Lovegrove, 99 Southwood Lane, Highgate, N.
"	8	Dublin—Five Cottages	Gt. Northern Rly. Co. (Ireland)	Company's Engineer-in-Chief, Dublin.
"	9	Mortlake—Twenty-six Workmen's Dwellings	Barnes Urban District Council	G. B. Tomes, Surveyor, Council Offices, High St., Mortlake, S.W.
"	11	Downpatrick—Twelve Labourers' Cottages	Rural District Council	E. Nolan, Council's Engineer, Union Workhouse, Downpatrick.
"	11	Cwmpark, Glam.—Chapel	—	Jacob Rees, Architect, Pentre.
"	23	Clapham, S.W.—Portion of Car Sheds	—	Architect's Department (Highways Section), 19 Charing Cross Road, W.C.
"	24	Whitchurch, near Cardiff—Superstructure of Asylum	Cardiff Corporation	Oatley & Skinner, Architects, Edinburgh Chambers, Baldwin Street, Bristol.
"	24	London, S.W.—Widening, &c., of Station	L. B. & S. C. Railway Co.	Engineer of the Company, London Bridge Station, S.E.
		ENGINEERING		
May	28	Lymington—Water Fittings, &c.	Corporation	J. D. Rawlins, 38 High Street, Lymington.
"	28	Manchester—Lock Gates	Ship Canal Co.	W. H. Hunter, 41 Spring Gardens, Manchester.
"	28	Dewsbury—Heating, &c., Chapel	Guardians	Holtan & Fox, Architects, Corporation Street, Dewsbury.
"	28	Leeds—Heating Apparatus	Graham, Morton & Co., Ltd.	Graham, Morton & Co., Ltd., Black Bull Street, Leeds.
"	29	Brackley—Gasholder Tank	Gas Co.	J. G. Clarke, Secretary, Gas Offices, Brackley.
"	29	Widnes—Purifiers	Corporation	J. Carr, Gas Engineer, Widnes.
"	30	Redcliffe, Lancs—Electrical Plant	Urban District Council	Lacey, Clirehugh & Sillar, 2 Queen Anne's Gate, Westminster.
"	30	Rotherham—Engine and Dynamo	Corporation	Borough Electrical Engineer, Rotherham.
"	30	Larne, Ireland—Lighting	Urban District Council	W. G. Younge, Clerk, Town Hall, Larne.
"	30	Foots Cray, Kent—Electric Lighting	Urban District Council	A. E. Leonard, Clerk, Council Offices, Sidcup, Kent.
"	30	Northfield and King's Norton—Widening of Bridges, &c.	Highway and Bridges Committee	J. H. Garrett, County Road Surveyor, Shirehall, Worcester.
June	1	Beckenham—Steam Fire-engine	Urban District Council	F. Stevens, Clerk, Beckenham.
"	1	Edinburgh—Wirings, &c.	Corporation	Resident Electrical Engineer, Dewar Place, Edinburgh.
"	1	Westport, Ireland—Dredging Machinery	Harbour Commissioners	H. R. Vereker, Harbour Engineer, Belclave, Westport.
"	1	Westport, Ireland—Barge	Harbour Commissioners	H. R. Vereker, Harbour Engineer, Belclave, Westport.
"	2	Ashton-in-Makerfield—Meters, &c.	Urban District Council	H. Niven, Engineer, Gasworks, Ashton-in-Makerfield.
"	2	Tyldesley, Lancs—Retorts, &c.	Urban District Council	Mr. Ginman, Engineer, Gasworks, Tyldesley.
"	2	Oldham—Coal-Measuring Boxes, &c.	Electricity Committee	A. Andrew, Gas and Water Offices, Oldham.
"	4	Matlock Bridge—Widening Bridge	Derbyshire County Council	J. S. Story, County Surveyor, County Offices, Derby.
"	5	Bridgend, Wales—Waterworks	Penybont R.D.C.	J. & F. J. Hurley, 10 Bridgend Road, Aberkenfig.
"	6	Haslingden, Lancs—Pumping Station	Town Council	J. S. Green, Borough Engineer, Municipal Offices, Haslingden.
"	8	Brighton—Electrical Plant	Town Council	A. Wright, Star Chambers, 30 Moorgate Street, E.C.
"	9	Littleborough, Lancs—Electric Lighting	Urban District Council	W. C. C. Hawtayne, 9 Queen Street Place, London, E.C.
"	12	Berwyn, near Llangollen—Bridges and Roadways	—	E. Foulkes-Jones, Secretary, King's Bridge Committee, Llangollen.
"	13	Trim, Ireland—Bridge	Meath County Council	H. J. Cullen, Secretary, County Offices, Navan.
"	15	Ghiza—Electric Power Supply	—	Commercial Intelligence Branch, B. of T., 50 Parliament St., S.W.
"	16	Richmond, Ireland—Waterworks	District Asylum Committee	J. H. H. Swiney, Engineer, Avenue Chambers, Belfast.
"	16	Gloucester—Light Railways	Tramways Committee	A. Dickinson & Co., Telephone Buildings, Birmingham.
"	17	Vossern—Weert St. George—Railway	—	M. Darteville, Rue de Turquie, No. 18, Saint Gilles, Bruxelles.
July	1	Rangoon—Electric Supply Undertaking	Municipal Committee	Ogilvy, Gillanders & Co., 67 Cornhill, E.C.
Oct.	30	Marina, Upper Barracca, Malta—Lift	Crown Agents for the Colonies	Receiver-General and Director of Contracts, Valletta, Malta.
		FURNITURE:		
June	13	Fulbourn, near Cambridge—Bedsteads, &c.	—	Steward, Cambridgeshire Asylum, Foulbourn.
		IRON AND STEEL:		
May	28	Kirkby Lonsdale—Purifiers	Gas Co.	J. Greenbank, Secretary, Gas Offices, Kirkby Lonsdale.
"	28	Birmingham—Tramrails, &c.	Tramways Committee	J. Price, City Engineer, Council House, Birmingham.
"	29	London, S.W.—Stores	Admiralty	Director, Works Department, Admiralty, London, S.W.
"	29	London, E.C.—Ironmongery	Corporation	Surveyor, Guildhall, London, E.C.
"	29	Lancaster—Window Guards	—	Clerk of the Works, County Lunatic Asylum, Lancaster.
"	30	Bexley—Iron Fencing	Urban District Council	W. T. House, Surveyor to Council, Bexley.
"	30	Abergavenny—Iron Fence	Joint Burials Committee	J. T. Rutherford, Clerk, Town Hall, Abergavenny.
"	30	Stratford-on-Avon—Shedding, &c.	Warwickshire Agriculture Society	F. H. Moore, Secretary, Northgate Street, Warwick.
"	30	Oswestry—Railway Stores	Cambrian Railways Co.	Stores Office, Cambrian Works, Oswestry.
"	30	Llandudno—Pipes, &c.	Urban District Council	E. P. Stephenson, Town Hall, Llandudno.
"	30	Walsall—Iron Tubes and Fittings, &c.	Corporation	Gas Office, Bridge Street, Walsall

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	IRON AND STEEL—*cont.*		
June 1	Queenstown, Ireland—Pipes, &c.	Urban District Council	J. H. Campbell, Town Clerk, Town Hall, Queenstown.
„ 1	Glasgow—Steel Girders, &c.	Corporation	Office of Public Works, 64 Cochrane Street, Glasgow.
„ 2	Ashton-in-Makerfield—Lamp Columns, &c.	Urban District Council	H. Niven, Engineer, Gasworks, Ashton-in-Makerfield.
„ 2	Leeds—Ironmongery, &c.	Watch Committee	Chief Constable Office, Town Hall, Leeds.
„ 2	Tyldesley—Pipes	Urban District Council	Mr. Ginman, Surveyor, Gasworks, Tyldesley.
„ 4	Cardiff—Pipes	Corporation	C. H. Priestley Waterworks Engineer, Town Hall, Cardiff.
„ 5	Bridgend, Wales—Cast-Iron Pipes	Penybont Rural District Council	J. & F. J. Hurley, 10 Bridgend Road, Aberkenfig.
„ 8	Johannesburg—Rails, &c.	Municipality	Mordey & Dawbarn 82 Victoria Street, London, S W.
„ 8	Amsterdam—Water-Pipes, &c.	Municipality of Rotterdam	Widow P. van Waesbarge & Son, Booksellers, Rotterdam.
„ 8	London, S.W.—Engineer's Tools, &c.	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
„ 15	Bangkok, Siam—Permanent-way Materials	Royal Siamese State Railways	Director-General, Gehots, Bangkok.
„ 15	Bangkok, Siam—Railway Stores	Royal Siamese State Railways	Siamese Legation, London.
	PAINTING AND PLUMBING:		
May 28	London, N.E.—Re-painting	Hackney Borough Council	N. Scorgie, Borough Engineer, Town Hall, Hackney, N.E.
„ 28	Portsmouth—Decorating	Town Council	C. W. Bevis, Elm Grove Chambers, Elm Grove, Southsea
„ 29	London, E.C.—Materials, &c.	Corporation	Surveyor, Guildhall, London, E.C.
„ 30	Oswestry—Lead, Paints, Oils, &c.	Cambrian Railways Co.	Stores Office, Cambrian Works, Oswestry.
„ 30	Abergavenny—Painting, &c.	Joint Burials Committee	J. T. Rutherford, Clerk, Town Hall, Abergavenny.
„ 30	Walsall—Brushes, Oils, Lead Piping, &c.	Corporation	Gas Office, Bridge Street, Walsall.
„ 30	Willenhall, Staffs—Painting, &c.	Urban District Council	T. E. Fellows, Engineer, Town Hall, Willenhall.
„ 30	Llandudno—Lead and Lead Piping, &c.	Urban District Council	E. P. Stephenson, Town Hall, Llandudno.
June 1	Manchester—Paint, &c.	Tramways Committee	J. M. McElroy, 55 Piccadilly, Manchester.
„ 2	London, W.—Painting, &c., at Infirmary	Paddington Guardians	E. H. Line, 8 Craig's Court, Charing Cross, W.C.
„ 2	Frizington and Arlecdon, Cumberland—Painting, &c.	School Board	J. R. Thompson, 18 Scotch Street, Whitehaven.
„ 2	Tyldesley—Lead Pipe	Urban District Council	Mr. Ginman, Engineer, Gasworks, Tyldesley.
„ 6	Preston—Painting	Lancashire County Council	W. C. Hall, County Bridge Master, County Offices, Preston.
	ROADS AND CARTAGE:		
May 28	Chatham—Granite, Flints, &c.	Corporation	C. Day, Borough Surveyor, Town Hall, Chatham.
„ 28	Braintree—Granite	Urban District Council	H. H. Nankivell, Surveyor, Vestry Hall, Braintree.
„ 29	West Didsbury, Lancs—Tar Macadamising	Urban District Council	A. H. Mountain, Surveyor, Town Hall, West Didsbury.
„ 29	Avonmouth—Making-up	Barton Regis R.D.C.	J. A. Henderson and H. H. Howell, Council Offices, Southmead, Westbury-on-Trym.
„ 30	Aberdeen—Forming O C.	Land Association Ltd.	Walker & Duncan, 3 Golden Square, Aberdeen.
„ 30	Milton-next-Sittingbourne—Paving	Urban District Council	W. R. Warlow, Surveyor, Town Hall, Milton-next-Sittingbourne.
„ 30	New Malden, Surrey—Various	Urban District Council	District Surveyor, Council Offices Cambridge Road, New Malden.
„ 30	Prestwich, Lancs—Street Improvements	Urban District Council	Surveyor, Chester Bank Prestwich.
„ 30	Worcester—Widening, &c.	Highways and Bridges Committee.	A. E. Brookes, Breedon Cross, King's Norton, Birmingham.
„ 30	Llandudno—Setts and Macadam, &c.	Urban District Council	E. P. Stephenson, Town Hall Llandudno
June 1	Leeds Granite, Limestone, &c.	Rural District Council	J. H. Ford, Clerk, Poor Law Offices, Leeds.
„ 2	Epsom—Materials. &c.	Rural District Council	T. E. Ware, Council's Surveyor, Waterloo Road, Epsom.
„ 3	Morriston and Pontardawe, Wales—Widening	Glamorgan County Council	T. M. Franklen, Clerk, County Offices, Cardiff.
„ 6	Clayton-le-Moors, Lancs—Road Works, &c.	Urban District Council	A. Dodgeon, Council's Surveyor, Clayton-le-Moors.
„ 6	Raunds, Northants—Materials	Urban District Council	T. Yoke Engineer, Raunds.
„ 8	London, S.E.—Paving and Making-up Street	Camberwell Borough Council	W. Oxtoby, Borough Engineer, Town Hall, Camberwell.
„ 8	Beckenham—Making-up Roads	Urban District Council	J. A. Angell, Surveyor, Council Offices Beckenham.
„ 9	Tottenham—Making-up Roads	Urban District Council	W. H. Prescott, 712 High Road, Tottenham
„ 9	Tottenham—Tar and Asphalt Paving	Urban District Council	W. H. Prescott, 712 High Road, Tottenham.
„ 12	Berwyn, near Llangollen—Roadways	——	E. Foulkes-Jones, Secretary King's Bridge Committee, Llangollen
	SANITARY:		
May 28	Durham—Sewerage Works	Rural District Council	G. Gregson, 38, Saddler Street, Durham.
„ 29	Hull—Sewer, &c.	Corporation	A. E. White, City Engineer, Town Hall Hull.
„ 30	Oswestry—Drain-pipes, Lime, &c.	Cambrian Railways Company	Stores Office, Cambrian Works, Oswestry.
„ 30	Heath Town, Staffs—Sewers, &c.	Urban District Council	R. E. W. Berrington, Engineer, Bank Buildings, Wolverhampton.
„ 30	Walsall—Lime	Corporation	J. R. Cooper Town Clerk, Borough Offices Walsall.
„ 30	Llandudno—Sewer Pipes, &c.	Urban District Council	E. P. Stephenson, Town Hall, Llandudno.
June 1	Ayr Sewers, &c.	District Committee	W. R. Copland, 146 West Regent Street, Glasgow.
„ 2	Formby, Lancs—Sewerage and Sewage disposal Works	Rural District Council	C. A. Atkinson, 11 Tithebarn Street, Liverpool
„ 3	Bredbury—Sewer, &c.	Urban District Council	J. W. Bain, Clerk, Council Offices, School Brow, Bredbury
„ 3	Todmorden—Sewers, &c.	Sanitary Committee	Borough Surveyor, Market Ground, Todmorden.
„ 8	Great Harwood, Lancs—Sewage-disposal Works	Joint Sewerage Board	Brierley & Holt, 20 Richmond Terrace, Blackburn
„ 8	Tunbridge Wells—Sewerage, &c, Works	Rural District Council	F. Harris, Broadway, Southborough Tunbridge Wells.
„ 10	Chelmsford—Sewers	Town Council	G. A. Lasse, 16 London Road, Chelmsford.
	TIMBER:		
May 29	London, E.C.—Timber	Corporation	Surveyor, Guildhall, London, E.C
„ 30	Oswestry—Foreign Timber	Cambrian Railways Company	Stores Offices, Cambrian Works, Oswestry.
June 1	Manchester—Timber	Tramways Committee	J. M. McElroy, 55 Piccadilly, Manchester.
„ 8	South Hetton—Colliery Timber	Coal Company, Ltd.	J. R. Lambert South Hetton, Sunderland.

List of Competitions Open.

DATE OF DELIVERY	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &C.	BY WHOM ADVERTISED.
May 30	Gillingham, Kent—Public Swimming & Slipper Baths	£20, £10, £5.	——	F. C. Boucher, Clerk to Gillingham U.D.C., New Brompton, Kent.
June 2	Abergavenny—Library (ltd. to Local Architects)	£20.	——	E. H. Restall, Librarian, Town Hall, Abergavenny.
„ 9	Croydon—Children's Home	£15 15s., £10 10s.	——	H. List, Clerk, Union Offices, Mayday Road, Thornton Heath.
„ 9	Croydon—Two Relief Stations	£10 10s.	——	H. List, Clerk, Union Offices, Mayday Road, Thornton Heath.
„ 13	Hamilton, Scotland—Cemetery	——	10s. 6d.	A. L. Smith 25 Duke Street, Hamilton.
„ 18	Limerick—Library and Museum	£75, £25.	——	W. M. Nolan, Town Clerk, Town Hall, Limerick.
„ 19	Bridlington—Water-Supply Scheme	——	——	Mr. Woodhose, Chairman of Parish Council, Flamborough.
„ 23	Poplar, E.—Public Library	£75.	——	Borough Surveyor, Council Offices High Street, Poplar, E.
July 20	Taunton—Library	£30, £20, £10.	10s. 6d.	G. H. Kite, Town Clerk, Municipal Buildings, Taunton.

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THE

BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

June 3, 1903. Vol. 17, No. 434. 9, East Harding Street, E.C.

The Strand "Island." SINCE we referred, three weeks ago, to Mr. Hamo Thornycroft's suggestion for cutting off the eastern corner of the Strand "island," or crescent, several other modified schemes have been put forward, but, in the main, Mr. Thornycroft's idea has been preserved. Mr. Emden has insisted that the crescent frontage should be regarded in its entirety, and that by cutting off a portion of one end its symmetry would be destroyed. Mr. Thornycroft, however, points out that one does not regard the scheme from a balloon, and that when actually on the ground the two ends of the crescent could not be regarded at the same time; and he reverts to his original contention that, as laid out, the church of St. Clement Danes will not be properly seen from the west and that the line of the Law Courts will be lost until one arrives "at the turmoil at the corner of Aldwych." Mr. Belcher offers a modification of Mr. Thornycroft's plan, and Mr. Mark H. Judge suggests an island pavement between the two churches; but it all seems to no purpose, for at last week's meeting of the London County Council the proposal was not favourably received and the valuer presented an ingenious but misleading estimate that the ground was worth an annual rental of £12,000, representing a capital sum of £360,000. It has been observed that amateur alterations made at the last moment after the lines of an improvement have been maturely considered can only have a mischievous effect, of which there is a conspicuous example in the alteration made by a Committee of the House of Commons in the plan of Northumberland Avenue, which was very detrimental to the gradients as arranged by the engineer to the Metropolitan Board of Works; but Mr. Thornycroft has shown very clearly that his idea is an admirable one. We notice that the Council has allowed itself to be persuaded by Mr. Emden to reject the major part of its Committee's recommendation about the letting of plots on the "island" and the erection of buildings thereon. It was recommended that the elevations of the buildings fronting the Strand, Aldwych and Kingsway should be carried out in Portland stone, marble or granite, and should be "of such design as the Corporate Property Committee of the Council shall approve as worthy of the position." Then came the following important provisoes, which Mr. Emden managed to get rejected by 51 votes to 42, as well as securing the addition of brick to the materials of construction: "Provided that if the design for the elevation submitted by the lessee shall not be approved by the Committee, the lessee shall submit a new or amended design, and for that purpose shall be at liberty to retain, either alone or in association with any other architect, any one of the following architects, namely, Mr. H. T. Hare, Mr. William Flockhart, Mr. Mervyn Macartney, Mr. Leonard Stokes. And if the Committee does not approve of such new or amended design and cannot agree with the lessee upon any satisfactory amendment thereof, the designs submitted by the lessee shall be referred to the Senior Architectural Royal Academician for the time being willing to act, who shall determine whether the designs or either of them submitted by the lessee are or is worthy of the position, and the costs of the reference shall be in the discretion of the referee; and in case the referee shall determine that the designs are not worthy of the position the lessee shall submit new designs for approval of the Committee, and in case of difference thereon they shall be submitted in like manner to the aforesaid referee." In view of the fact that the Council's competition was a fiasco, we think it very regrettable that these provisions should have been rejected. Mr. Emden can congratulate himself for having secured this result: we are sorry we cannot congratulate him on the architectural design which he has displayed as the first building on Aldwych.

* * *

The Liverpool Cathedral Decision. WITH all due respect to Mr. Bodley, we can hardly suppose that the last decision of the Liverpool Cathedral Executive Committee has met with approval among architects. Once more the Committee have changed front in face of hostile public opinion. We must be thankful that they have at least accepted Mr. Scott's design, so preserving the worth of the competition, but there is no reason why they should have appointed Mr. Bodley as collaborator. Mr. Scott may be a young man, but he has proved his ability in the design selected. Mr. Bodley is well on in years and has long since been settled in his treatment of architecture. There is a great difference between the Gothic of the two men; each claims its own individuality; and we should not consider it fair to Mr. Scott if his design were to be altered by the hand of another.

The Registration Problem. MR. SILVANUS TREVAIL'S propaganda has brought forth another outburst about the registration of architects; the same question that has been periodically revived for the last twenty-five years, and one about which opinion is as diverse and as prejudiced as ever. This is not surprising when the difficulties of the problem are realized. If there were nothing but construction to consider the matter might have been settled from the first, but it is the art issues which hedge the scheme with difficulties. The pros and cons have been discussed over and over again, but generally from either one extreme or the other. Let the most recent expressions of opinion be considered. Prof. Beresford Pite says that the registration of architects would not effect any public benefit. Mr. T. G. Jackson holds that those artistic qualifications which differentiate the architect from the builder cannot be tested by examination; that a diploma of architecture would have no value; that it would separate architecture still more from the sister arts; and that "no legislation can protect the public from bad design, nor could legislation help to prevent bad construction unless builders and all others who erect buildings were required to pass the test of examination as well as architects, inasmuch as architects are not employed in the majority of cases." Mr. Reginald Blomfield says the leading architects of the day are opposed to the scheme, as making confusion worse confounded. Of course, on the other hand, Mr. Trevail, Mr. Seth-Smith, Mr. Emden and others contend that registration would not fetter the architect in his art, that it would protect the public, and that, moreover, it is already established in other countries. We have not the space nor the desire to again enter into the by-paths of this matter. Let each architect think for himself. Let what can be settled be settled as a thesis: for instance, that it is impossible to examine a man in his "art," though you may test his knowledge of art history: and then arises the question as to whether too much stress is laid on the historical side. There are "F.R.I.B.As." who have undertaken their studies, but whose designs are atrocious, just as there are good designers who have very little knowledge of art history. Taste is largely governed by good training: with the opportunities for such training so scarce as they are in this country it seems that we are hardly yet ready for a Registration Bill.

EGYPTIAN ARCHITECTURE.*

THE BEGINNINGS OF THE STYLE.

By Prof. Sir MARTIN CONWAY.

THE Egyptian style appears to have arisen about the time of the Fourth Dynasty, and to have rapidly developed during the Fifth. Its elements existed earlier, but not till the Fourth Dynasty were they definitely compounded into an architectural style applicable to buildings in stone. Until recently it was commonly believed that the early dynastic Egyptians employed wood for small and costly edifices. In fact, however, no such Egyptian wooden architecture ever existed. Pictures and models which survive do look like representations of wooden structures—indeed, some of the slender columns depicted have more the appearance of metal than wood. It must be remembered that unpractised architectural draughtsmen, though for their day able artists, invariably represented columns with exaggerated slenderness. Numerous examples exist in the wall-paintings of Roman Italy; as a special illustration may be mentioned Giotto's painting of the façade of the Temple of Minerva at Assisi.

The columns that represent tent-poles and the octagonal, or sixteen-sided, columns of the hieroglyphs were originally of wood. The rest were of reed-bundles plastered over with mud. Both kinds had been copied into stone at the date of the pictures referred to, and those pictures may actually depict stone buildings, little though they suggest that material.

The earlier Egyptian stone buildings had no architectural features whatever. It was mere building, not architecture. The chapel excavated by Professor Petrie was the simplest kind of stone building conceivable. The neighbouring mastabas were similarly destitute of architectural quality; their false doors were inscribed with beautiful hieroglyphs, but there was no attempt to arrange them architecturally.

Down to the middle of the Fourth Dynasty, then, the craft of building in stone had been carried to a high degree of perfection, but it had developed no architectural art. Buildings whose forms and features were determined by the desire to give pleasure to the eye were only carried out in the old materials of mud and reeds, with which the Egyptians had been familiar from the earliest prehistoric days.

Sir Martin described the characteristic features of a stone building in the developed Egyptian style. The walls have an external batter, are surrounded or edged by the torus moulding, and are crowned by the Egyptian gorge. The supports are either piers—square, octagonal, or sixteen or more sided—or clustered columns made in imitation of bundles of papyrus-stems or reeds, with a flat circular stone for base, and a capital made in imitation of a group of flowers, buds or palm-fronds. There are porticos and halls of columns, and there are dark chambers and passages. Only the piers, the porticos and the halls of columns can have descended in direct sequence from the early stone buildings, and it is not to be supposed that such elements were lacking in contemporary or even prehistoric mud buildings. It may therefore be safely declared that all the features and principles of Egyptian architecture were invented by the mud-builders and were afterwards directly translated into stone. The outward batter of the walls of stone buildings had no meaning in stone; it was borrowed from mud-brick. The Egyptian gorge copied the old fringe of palm-frond tips with which mud walls once habitually terminated. The torus moulding was a translation of the bundle of reeds that protected the tender angle of termination of a mud wall.

Discussing the question as to when this translation took place, and in what kind of building, Sir Martin said that the well-known sarcophagus of Khufu-ankh at Cairo throws a welcome light upon the problem. It represents a palace apparently built of crude brick with wooden fittings. The vertical grooving along the top of the lower part was doubtless intended to represent the gorge. If at that time the gorge had actually begun to be imitated in stone as a cornice to stone buildings, the mason who carved this sarcophagus would have known better than to represent it by flat grooving. The fact that he flattened it seems to prove that, though at the time the gorge was in common use as top member of a crude brick building, it had not yet taken its place in stone building. The sarcophagus of Menkaura, as compared with that of Khufu-ankh, shows a development. Like the latter, it imitates a building usually said to be of wood, but really of mud and reeds, or mud-brick, perhaps, with wood fittings. This building is surmounted by a fully-developed gorge cornice, whilst each façade is surrounded by a torus moulding. Here, then, is the Egyptian style completely formed. It must have sprung into existence between the days of Khufu and Menkaura.

The Fifth Dynasty has left us several actual examples of stone architecture containing decorative features, such as a mastaba at Sakkara, where the architrave of a portico is decorated with a stone gorge rather tentatively employed. The Fifth Dynasty tomb of Ptah-Shepses at Abusir, excavated in 1893, when fragments of lotiform capitals and columns were brought to light, yielded results of the highest importance for the present enquiry.*

The tomb was approached by a great court, which was surrounded by a colonnade of twenty square piers. At the end of the great court was a porch of two columns, of which only fragments remain. In a lateral chamber, which contained the statues of the deceased, were fragments of the two columns that had supported the roof. The base and lower portion of the shaft of one were in place, and enough fragments of a capital were found to enable a complete restoration to be made. Column and capital in each case were hewn out of a single block of limestone. The circular base is simply bevelled off at a slope of about 45 degs. Its diameter is large in proportion to that of the shaft. Such large bases were required when they were used instead of a foundation to spread the pressure of a shaft over an area of ground large enough to support it. This column and capital are, beyond question, the finest that have come down to us from ancient Egypt, as far as workmanship and carving are concerned. The proportions of the capital are excellent. The abacus is a thin rectangular tablet. In the Middle Empire it was made thicker. It is only by comparing these Abusir fragments with later examples of the Lotiform order, such as the Middle Empire rose granite column in the British Museum, that its surpassing merit becomes obvious. The conclusion may be justified that the Memphite architecture of the Fifth Dynasty was highly meritorious, and may have been the finest ever produced in ancient Egypt, or even in the world before the great days of Greece. The date of the Abusir column is about 3600 B.C.

The pyramid field of Abusir is being systematically explored by the German Oriental Society. They have already laid almost entirely bare the Pyramid Temple of the Fifth Dynasty king, Ra-en-user, which is earlier in date than Ptah-Shepses' tomb. In Ra-en-user's temple the gorge cornice and the colonnade of clustered columns were fully developed. The courts were floored with basalt. In the great court was a red sandstone cistern to catch the rainwater. A drain led this out to another red sandstone cistern. The base of the walls was also of basalt (in places of granite) which explains the black-painted dado so frequently found in tomb chambers of the Old Empire. The walls, above the basalt foot, were all covered with fine plaques of white limestone, delicately carved and painted, of which only fragments remain. The side posts of the magazine doors were of red sandstone. The only fragment of sculpture found was a noble head of a colossal granite lion. There were also remains of an alabaster altar embellished with reliefs of the various nomes.

Throughout the period when true stone architecture was arising in Egypt pyramid-building steadily lost its charm for the kings. Khafra's pyramid was smaller than Khufu's, Menkaura's than Khafra's; their successors were yet smaller. The reason evidently was because, as time advanced, less of the mass of human energy under the command of the king was devoted to pyramid building, and more to building of some other sort.

Sir Martin Conway next considered the character of the divine temples of the Old Empire. Fragmentary remains prove that Khufu and Khafra built temples of granite. The shrine was the chief feature, and its fossilized likeness is preserved as the Holy of Holies of almost every later temple. All of them possess one marked characteristic. Entering through the great pylon, and proceeding inwards from court to court and from chamber to chamber, there is a steady diminution in height the further you advance. The reason for this is plain. The normal temple plan resulted from a series of accretions. An Ancient Empire shrine received additions, mostly in front, in the Middle Empire, and successive further additions in the New Empire. Often the old parts were ruinous, and had to be rebuilt, but, according to the general Egyptian way of doing things, the habit was to reconstruct the old parts on the old scale, and as far as possible in the old style, and to add the new parts in the new style. The Middle Empire built on a larger scale than the Ancient Empire, the Eighteenth Dynasty on a larger scale than the Middle Empire, and the Nineteenth larger than the Eighteenth. Thus a big temple, resulting from the accretions of various building periods, naturally grew in scale from shrine to pylon, and this feature was adopted into the style of temple design, so that even a wholly new temple was built in that fashion. From these considerations we may safely conclude that the Ancient Empire temples were small in scale. The best of them, the important royal temples, were probably built of the hard and precious rocks, such as granite, diorite, porphyry and alabaster. We have every reason to conclude that all the later types of column and capital were fixed at this time. The lotiform, palmiform and campaniform or papyrus orders are all represented in the painted reliefs of the Ancient Empire.

Describing the Fifth Dynasty divine temple revealed by the recent German excavation, Sir Martin said that it was built near the Abusir pyramid field by the King Ra-en-user in honour of the sun-god Ra. Instead of a shrine its chief feature was an obelisk raised on a massive base covered with great blocks of granite at the foot and with fine white limestone above. The outer walls were built of big blocks of hard yellow limestone. The inner walls were badly built, but covered with plaques of finest limestone carved with delicate reliefs above a dado painted black. At important points the base of the decorated walls was of granite. The ceilings were painted with yellow stars on a blue ground. The relief carvings were admirable, in the style of the best reliefs in the almost contemporary tomb of Ptah-hotep.

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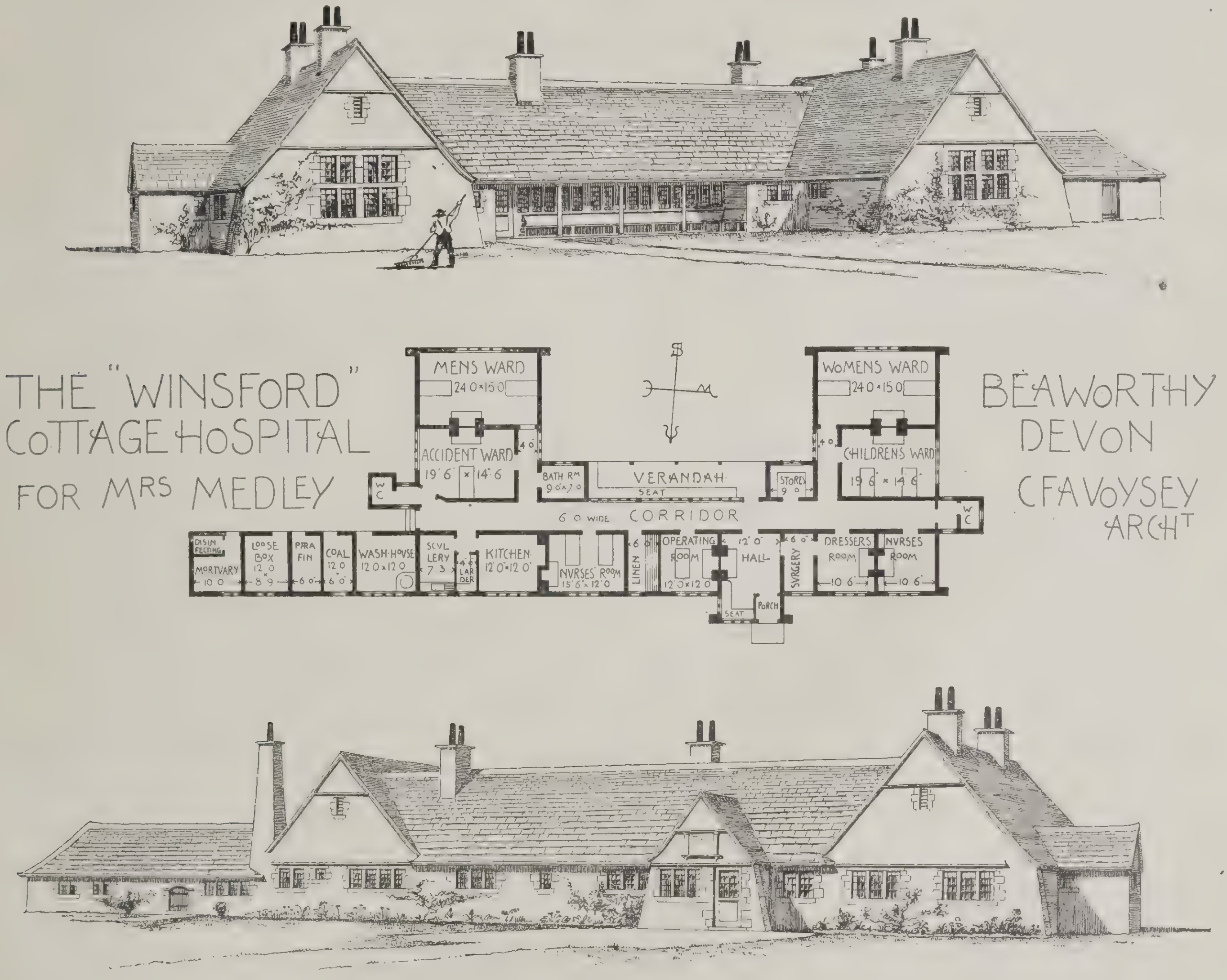
* Abstract of a paper read before the R.I.B.A. on May 18th, 1903.

* Sir Martin Conway eulogised Mons. G. Foucart for his labours in connection with this important find, and passed high encomiums upon his "Histoire de l'Ordre Lotiforme."

Sir Martin Conway referred to the evolution brought about in temple-building by changes in religious ceremonial, and by the gradual ousting of the laity from the temple services, and the rise of the priestly caste. Finally he considered the character of the sculptured decoration applied to Old Empire temples, and the system of its distribution. No Egyptian sculpture in the round ever surpassed that of the Fifth Dynasty. The mural decorative sculpture of the Old Empire was correspondingly excellent as far as it went, but it suffered from a great defect that sculpture in the round escaped. It was governed by faulty Egyptian perspective. A figure in the round could be absolutely copied from Nature, but a figure in low relief could only be truthfully represented by the aid of conventions not yet invented. Quality of surface is the great test of bas-relief. The best Fifth Dynasty work in this kind is sometimes good, though seldom to any high degree. The best result is attained when the artist treats vegetable forms, especially thick growths of lotus and other luxuriously growing plants. It is evident that he relied strongly upon colour for decorative effect. Where the colours have survived an excellent effect is obtained. The Egyptians attained to perhaps the most perfect apprehension of how to design and carry out a decorative scheme in one logical style ever attained by any people. Every form they employed, whether in their architecture or their sculpture, their paintings, their writing, their decoration of every object large or small, employed for whatever purpose, was the consistent outcome of a single artistic ideal. All parts, therefore, harmonized together.

Egypt has impressed the prestige of its mighty name as a country of great buildings and noble art upon the imagination of succeeding generations. We are only now beginning to realize that the reputation of Egypt as an ancient artistic nation, so far from being exaggerated, does not attain the level it deserves.



A COTTAGE HOSPITAL.

THE cottage hospital at Beaworthy, in Devonshire, illustrated on this page, is built of brick cement rough-cast, with Delabole slate roof, local grey stone window dressings and iron casements. The passages and verandah are paved with yellow vitrified Dutch tiles, and the floors of the wards are boarded on solid beds of concrete, so that there is no cold damp air or any harbour for rats below. The site is elevated and very much exposed to all weathers, and has a view to the south only. Cross-ventilation is provided in each ward by means of separate air-flues. The windows in the two main wards are placed towards the view and the sun. The children's ward looks over the railway, which is the only entertainment near the site. "I mention these points," says Mr. Voysey, "as the hospital faddists are apt to forget them."

Law Cases.

Unnecessary Notice asked for by Sanitary Authorities.—At the Worship Street Police Court on May 20th the case of *Cook* v. *Fulford* was heard. This was a summons by the borough council of Stepney against a builder for penalties for fixing a new w.c. basin and trap without previously giving notice to the clerk to the borough council. Mr. Alfred Cook, one of the sanitary inspectors, cross-examined by Mr. Brewster, solicitor for Mr. Fulford, said the borough council had had the drainage at Lamb Street under their notice since March, but he was not aware that the sewer into which the house drained was choked. He admitted serving the notice, dated April 29th last, requiring a choked and defective w.c. to be put right. He contended that though Mr. Fulford had put in the new w.c. it was necessary for him to give notice to the clerk to the borough council before carrying out the work. The basin and trap were properly fixed. At this point Mr. Brewster submitted that the by-law did not apply to a matter of this kind, and that it only provided for notice being given when an owner intended to do work on his own initiative. In the present case the owner was served with an order to put in a new w.c. The by-law was obviously intended to prevent work being done without the knowledge of the sanitary authorities, and in the present case the sanitary authorities must, if they did their duty, inspect, and after inspection they had admitted everything was properly done.—The magistrate dismissed the summons.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Stopping for Terra-Cotta.

SWINDON.—W. B. writes: "Is there any special kind of stopping for joints of terra-cotta work?"

Coloured Portland cement is generally used, and is probably the best material.

Rainwater for Domestic Purposes.

LONDON, S.W.—PAL writes: "(1) Could you tell me of any building in or around London where the rainwater is used as a domestic supply—I mean for supplying lavatories and w.c.'s? (2) Kindly name a book dealing with this subject."

(1) We are unable to mention any building of importance in or near London that utilizes its rainwater in the manner mentioned, as it is generally much more convenient to obtain the whole of the water supply—both for drinking and sanitary purposes—direct from a public company. Possibly Mr. Roberts, Haslemere, Surrey, who is the manufacturer of a rainwater separator, may be able to furnish you with such an address. (2) See Colyer's "Modern Sanitary Appliances," price 5s., published by Messrs. E. & F. N. Spon, Ltd., 125, Strand, London, and "Specification, No. 6," price 5s., published at these offices. T. E. C.

Radius of Gyration.

MANCHESTER.—Bosco writes: "Taking stock section from Messrs. Dorman Long's catalogue, say 20in. by 7½in. by 89lbs., the least moment of inertia being given as 70·63 and sectional area as 26·2 sq. in., there is for the radius of gyration

$$\sqrt{\frac{I}{n}} = \sqrt{\frac{70\cdot63}{26\cdot2}} = 1\cdot64.$$

Assuming this stanchion to be of unlimited length and supporting ends of beams at various intervals, how do these beams affect the radius of gyration? Is there any simple rule that may be worked to, without the laborious calculations that would be necessary to obtain accurate results?"

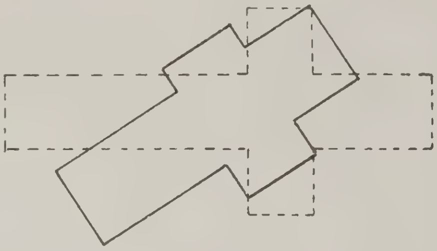
The radius of gyration remains the same so long as the bending of the stanchion takes place in the same direction. When a stanchion supports a girder at one side it is a non-axial load, and there is no very simple means of calculating the effect. The procedure is as follows: Let w = non-axial load in tons; d = distance of centre of pressure from centre of gravity of section in inches; A = area of cross-section in sq. in.; S = maximum stress in tons per sq. in.; D = distance of point of maximum stress from neutral axis in inches (generally half diameter); I = moment of inertia of section. Then

$$S = \frac{w}{A}\left(1 + d\frac{DA}{I}\right).$$

This, added to the mean stress produced by a central or axial load (if any), must not exceed the greatest safe stress permissible upon the stanchion according to Gordon's or Fidler's formulæ. When a stanchion supports two or four girders on opposite sides at the same level, the loading is symmetrical and the primary formula (Gordon's or Fidler's) alone is needed. When two girders are supported at the same level, but on adjacent sides of the stanchion, as at the angle of a building, the effect of each should be calculated separately by the above formula and the results added together. Much information on these points may be gathered from "Designing Ironwork," 2nd Series, Part II. (Spon, 2s. 6d.). HENRY ADAMS.

Old St. Paul's.

LONDON, S.E.—S. D. T. writes: "In Gwilt's 'Encyclopedia' there is a block plan of St. Paul's showing also the position of the old cathedral. The latter evidently lay east to west, but the former, I think, does not. Why was the present building not erected parallel to the old?"



Referring to the accompanying sketch, the dotted line represents the plan of Old St. Paul's, the black line that of the present building. Wren is said to have altered the orientation because of the fracture of the soil. He thought some parts of the original site were rather shaky.

CANON BENHAM.

Preservative for Zinc Flat.

OXFORD.—C. W. L. writes: "Is there any preparation that can be applied to a zinc flat, to stop the effect of weather, &c.?"

The only thing we can suggest is tar or paint.

Photographing Abroad.

MALDON.—W. J. P. writes: "I am going on a tour up the Rhine, and I intend to take a hand camera with me. Do the authorities in Holland, Germany or Belgium object to cameras?"

No, not when used for such purposes as yours.

External Fire-Escape.

WEST EALING.—J. G. writes: "I want to know the proper size of H-rolled steel joist to use as a column in a staircase outside a building, which would be used in case of fire by a good number of people. I send sketch (not reproduced)."

If the joints and details are properly attended to and the usual bases put to the stanchions, the dimensions shown on sketch will give sufficient strength. You must be satisfied with this information. You cannot expect to be taken step by step through the method of designing and calculating such work, as experts have to do this for a living.

HENRY ADAMS.

Scratches on Glass Windows.

SWINDON.—W. M. writes: "Is there any way of treating scratches on plate-glass windows? The windows in question have been badly scratched by painters while cleaning off the old paint."

The only thing we can suggest is to get a glass polisher to rub the scratches down. They may be rendered less noticeable by brushing over them with hydrofluoric acid, or even by varnishing.

Payment for Plans Prepared but not carried Out.

GLAISDALE.—SUBSCRIBER writes: "(1) What could I claim as payment for preparing plans and specification of villas for which tenders were advertised, the lowest being £1,650? I traced five copies of the plans and wrote five copies of the specification. (2) Also, what could I claim for preparing another set of plans, for which the lowest price was £1,400? My client is not proceeding with either of the plans, and, in that case, whose property are the drawings and specifications?"

(1) £60. (2) Three per cent. on estimate, viz., £42. In the case of *Ebdy* v. *McGowan* (reported in the "Times" for November 17th, 1870) it was decided that where the works were not proceeded with the employer could claim the plans upon payment of the architect's fees. We have several times given our reasons for not believing that this would be upheld in a higher court, as it is contrary to the principles of equity. The point needs deciding, but until it is a clause should always be placed in the specification and on each plan to the effect that they are the property of the architect, and the client should be given to understand so from the start.

Books to Study for Position of Builder's Foreman.

READING.—H. J. D. writes: "Having served some time in a builder's yard as a joiner, I wish to improve myself. I am thinking of going as a builder's foreman on a building. Please recommend the proper books to study."

"Specification, No. 6"; "Building Superintendence" by T. M. Clark; Rivington's "Notes on Building Construction;" (For prices see our No. 1 Book List.)

Timbers.

BRADFORD.—J. B. writes: "Please recommend a good cheap book on timber, giving the various varieties and the ports from which they are exported."

W. Richardson's "Practical Timber Merchant" and G. S. Boulger's "Wood" (see our No. 1 Book List.)

Books on Stresses and Stains and Greek Mouldings.

HIPPERHOLME.—PROBATIONER writes: "Please name a book on stresses and strains suitable for the R.I.B.A. intermediate examination; also one on Roman and Greek mouldings and their enrichments."

G. A. T. Middleton's "Stresses and Thrusts" (to be obtained from the Publisher, Technical Journals, 6, Great New Street, E.C., price 5s. post free), and Spiers's book on the Orders (see No. 2 Book List, p. xi).

Ancient Lights.

READING.—H. J. D. writes: "How long must a window be in existence to become an ancient light?"

For nineteen years and a day.

Sanitary Surveyorships.

SOUTHAMPTON.—W. R. writes: "I desire to qualify for the position of surveyor and sanitary inspector. What books should I study?"

"Sanitary Inspector's Guide," by H. Lemmoin-Cannon (price 3s. 6d.); "Municipal and Sanitary Engineer's Handbook," by H. Percy Boulnois (price 15s.); "Sanitary Engineering," by Colonel E. C. S. Moore (price 32s.); "Sanitary Engineering," by Frank Wood (price 8s. 6d.): "Construction of Roads and Streets," by H. Law and D. K. Clark (price 6s.); and "Specification," Nos. 5 and 6 (price 5s. each; 6s. in cloth, postage extra). All these books can be obtained post free, except where otherwise stated, from the Publisher, Technical Journals, 6, Great New Street, E.C.

Buildings to Measure in London.

LONDON.—G. M. T. writes: "Kindly name some buildings in London suitable to measure for the R.I.B.A. What is the best way to take undercut mouldings? Where can I find a description of the cymagraph?"

The following London buildings are suggested by the R.I.B.A. in the particulars of prizes and studentships for 1904:—St. George's, Hanover Square; The Confessor's Shrine and the Tomb of Edward III., Westminster Abbey; All Hallows, Barking; The West Portico of St. Paul's Cathedral; The Wellington Monument, St. Paul's Cathedral; and St. Mary-le-Strand. We could also recommend All Hallows, Lombard Street, which may be pulled down shortly, and of

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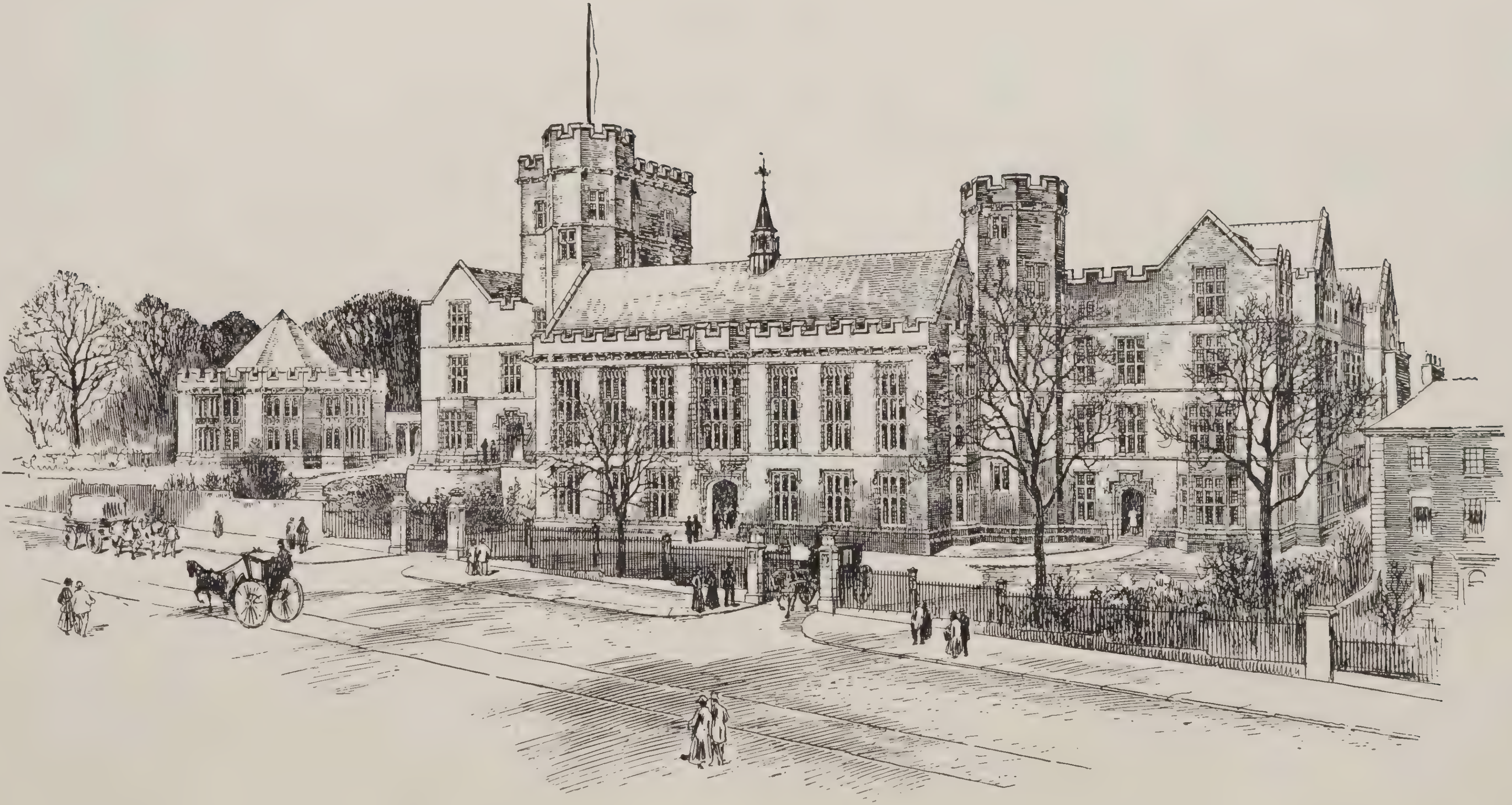
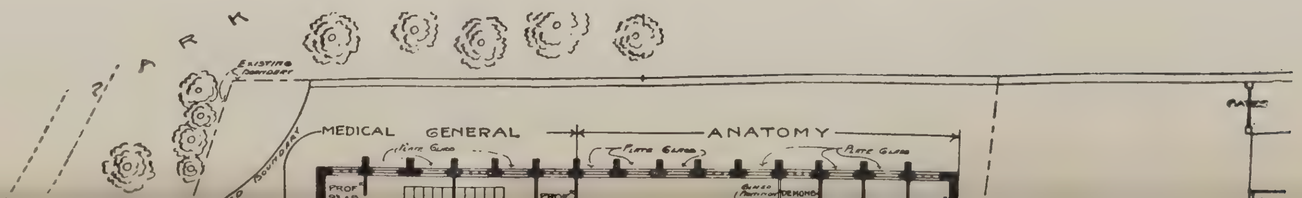
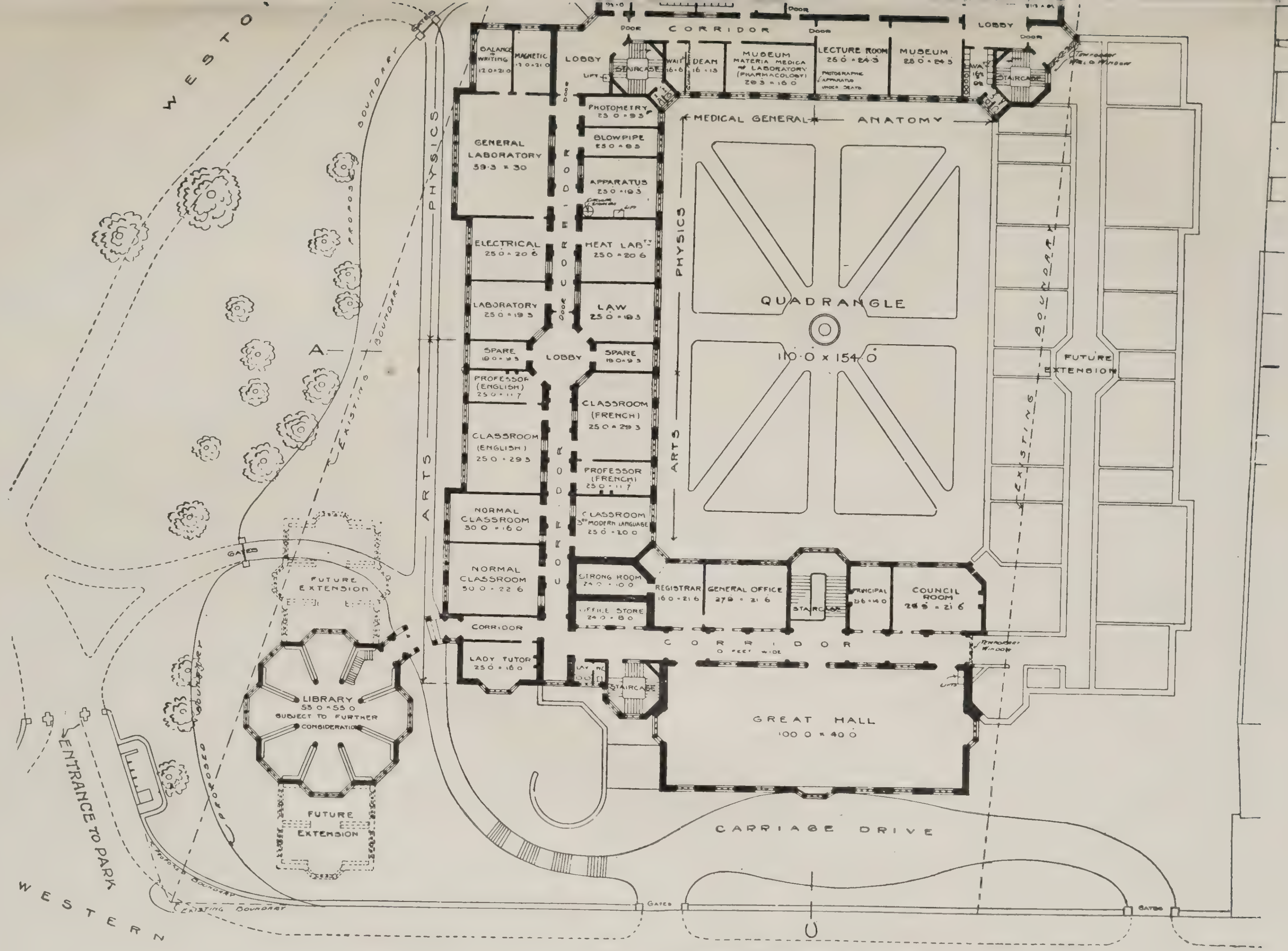
Wednesday, June 3rd, 1903.







New Buildings for University College, Sheffield.
Gibbs and Flockton, Architects.

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which measured drawings would then be valuable. A description of the cymagraph is given in Spiers's book on Drawing (see our No. 2 Book List on p. xi).

London, S.E.—H. H. writes: "Please suggest one or two buildings of easy access in London (south preferred) suitable to measure for the R.I.B.A final examination. Suppose that I took St. Mary-le-Strand, how could I best measure the side elevations, as the traffic on both sides would make it difficult to work with a ladder, which would have to stand on the very narrow pavement?"

See the foregoing answer. We see no reason why you could not use a ladder at the church of St. Mary-le-Strand early on a Sunday morning. If there is no other way, you might use a theodolite. See an answer to an enquiry on measuring buildings on p. 189 of our issue for April 10th, 1901; articles on pp. 14 and 31 of our issues for August 20th and 27th, 1902; and Spiers's book on Drawing.

Ancient Lights.

In Doubt writes: "A was the owner of a building in which were three windows receiving light over property belonging to B for forty years without interruption. Ten years ago A pulled down his building and at once erected new property. The front wall was advanced about 3ft. The new building has ten windows, three of which occupy practically the space of the old windows, but in an advanced position, as was the case in *Scott* v. *Page*, heard February 9th, 1886. Six years ago B approached A in regard to an agreement as to the ten windows; this, unfortunately, A agreed to. A was to be allowed to enjoy the light passing to the windows, subject to a rent of £2 per annum as an acknowledgment that the lights were enjoyed by permission of B and not from any right actual or acquired. The agreement can be terminated by either party on giving six months' notice. B has now given notice to A and threatens that unless a very much increased rent is paid he will obstruct the windows in question. Can this agreement, under the above conditions, be made void and A be able to retain his right of light to his three ancient windows, as was the case in *The Plasterers' Co.* v. *The Parish Clerks' Co.*, 20 L.J. Exch. 362, heard in 1851, when it was held that payment of rent was not an interruption under the statute, but that there must be an actual discontinuance of the enjoyment by reason of an obstruction submitted to for a year?"

In this case there is not only a payment of rent but a definite written agreement containing a definite written admission on A's part that the lights were at the date of the agreement enjoyed by permission only and not by right. This is an admission that the new windows stand upon a different footing to that of the old ones, and is a distinct abandonment of any claim based upon the old ones. The new windows have not existed long enough to have acquired any rights. In my opinion, therefore, A is completely in B's power, but it is my own opinion only, and may not be the opinion which the Courts would hold if the matter went to trial.

G. A. T. M

Clerks of Works Examination.

Bournemouth.—Clerk of Works writes: "What steps are necessary to obtain permission to sit at the above examination?"

The examinations are held by the Carpenters' Company, and particulars may be had on application to the Clerk to the Company, Carpenters' Hall, London Wall, E.C.

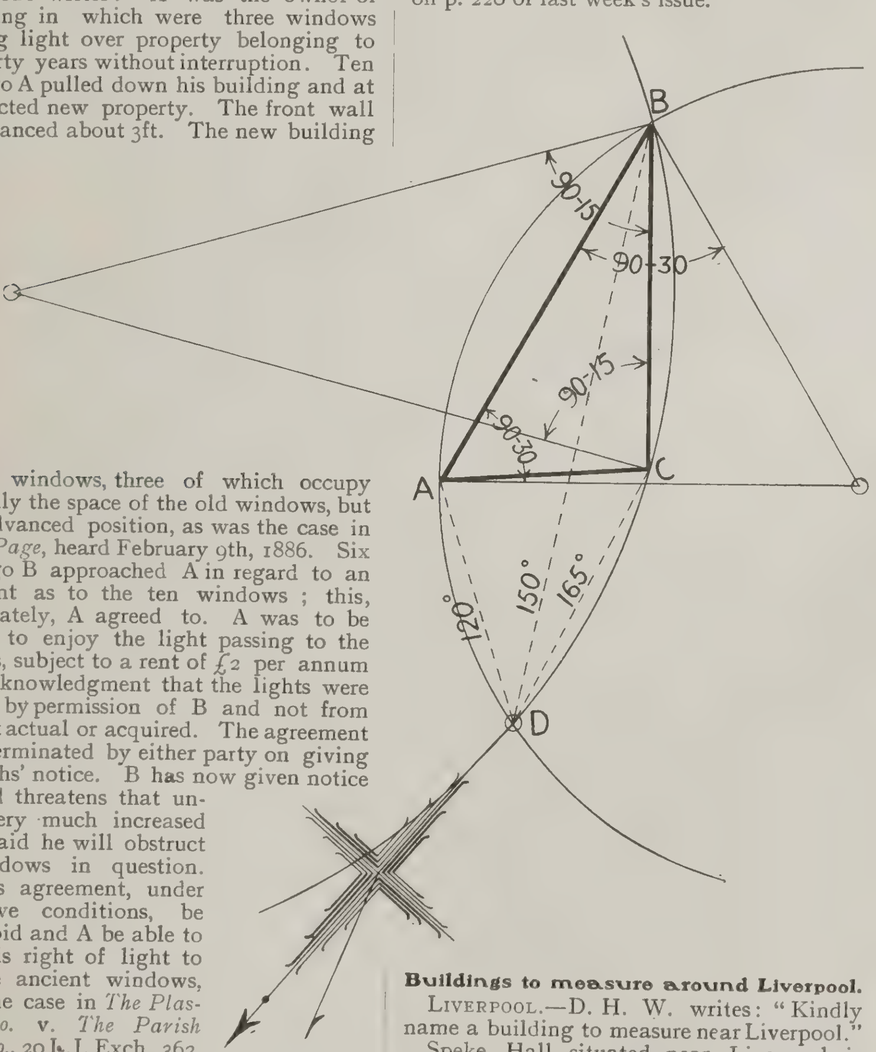
Entasis on Column.

Iron Bridge.—Bee writes: "What is the rule for finding the proper entasis on a column?"

See an answer to an enquiry on p. 393 of our issue for January 24th, 1900, and Mr. R. Phenè Spiers's book on "The Orders" (see our No. 2 Book List on p. xi).

Problem in Land Surveying.

The diagram below illustrates the enquiry on p. 220 of last week's issue.



Buildings to measure around Liverpool.

Liverpool.—D. H. W. writes: "Kindly name a building to measure near Liverpool."

Speke Hall, situated near Liverpool, is perhaps the most complete and least altered half-timbered house in the district. Built at the close of the sixteenth century, it was formerly surrounded by a moat. The arrangement of the house is that of a hollow square, a corridor running round the inside. The great hall is a fine apartment with flat ceiling and curious Renaissance wainscotting. Rufford Old Hall, situated near Ormskirk, retains but a very small portion of the ancient house, but it contains without question the finest great hall in the county. The roof is of considerable beauty, with great richness of detail; beneath the arch at the east end is a massive oak screen, richly carved and of early date. The carving of the door-heads, bosses and panels deserves particular notice on account of its freedom and variety.

M.

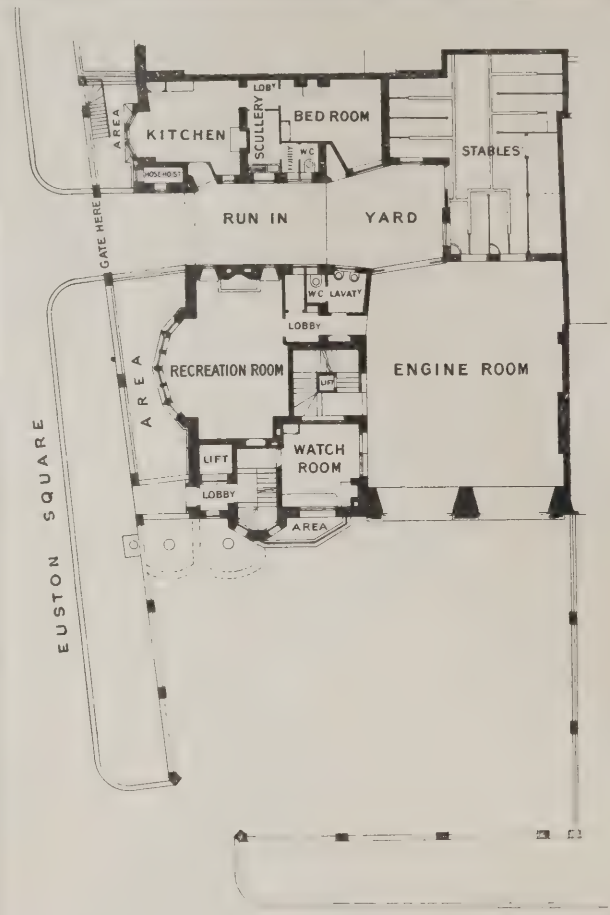
Bricks and Mortar.

Aphorism for the Week.

Michael Angelo and Raphael are for all beholders: Dante and Ariosto only for the readers of Italian.—S. T. Coleridge.

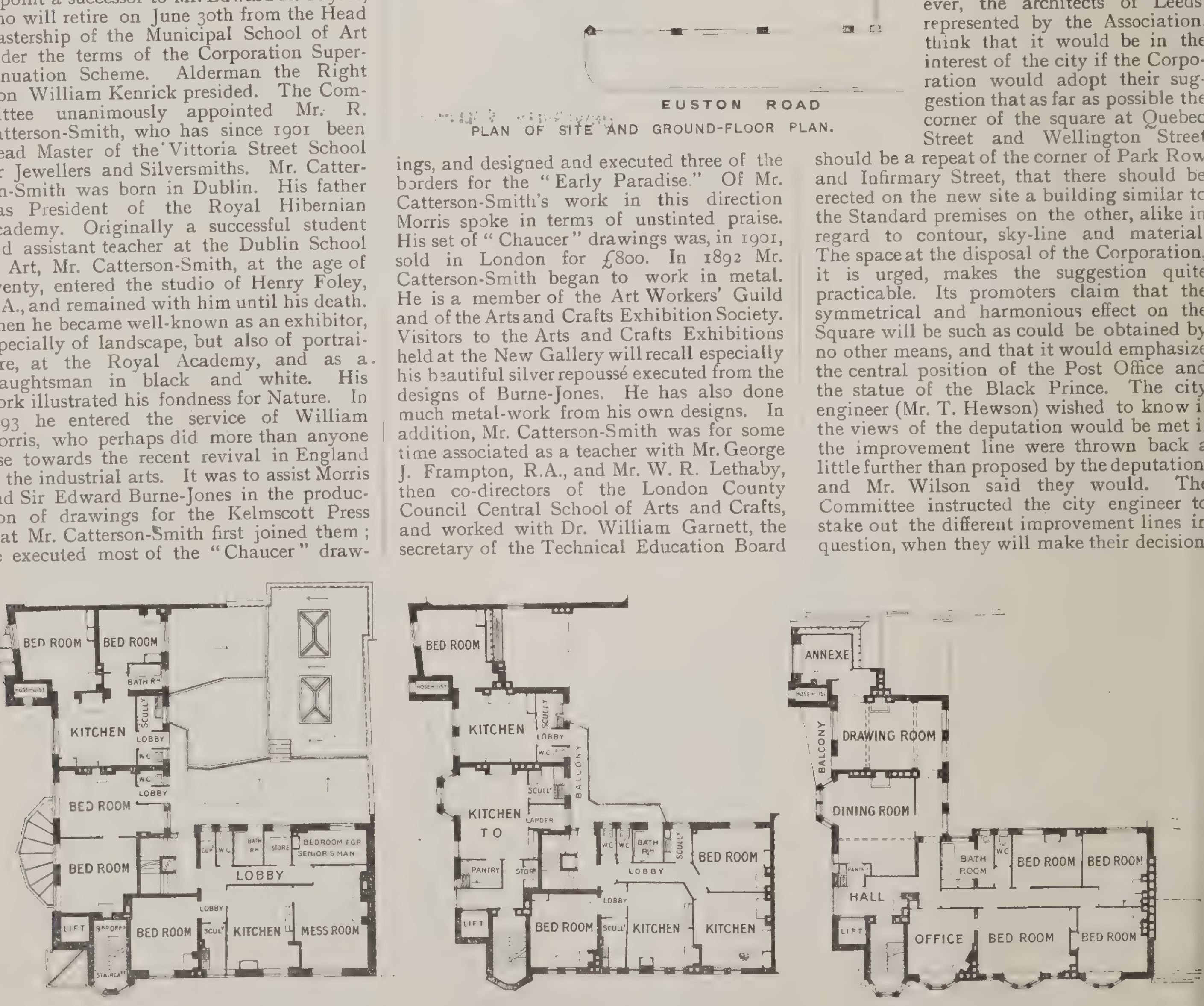
Our Plates. The site of the new University College buildings in Western Bank, Sheffield, is about three-quarters of a mile from the centre of the city, on the ancient and broad highway leading to the West End. The land is on the ridge of the hill, 420ft. above sea-level, and it adjoins the Weston Park on two sides; the area is 11,821yds., or nearly 2½ acres. The western boundary between the site and the park is to be of light iron railings, so that the building will appear as if within the park, and will be an improvement to it. The building is to be in what may be called Tudor style. The walls are to be of brick with stone dressings. The general plan is of buildings surrounding a quadrangle 154ft. by 110ft., with an annexe for the library. The buildings on the three sides of the quadrangle are to be erected immediately; the fourth side is to be erected at some future date when required, and the library as and when funds are available, and of such a design as shall then be determined. The building on the south side of the quadrangle and facing Western Bank is for general and administrative purposes, and comprises the entrance hall, common rooms, refectory, offices, council-room and the great hall. The hall, which is 100ft. by 40ft., is to have windows upon all sides, with dressed stone walls, oak dado, and oak open-timbered roof. The hall is also the principal feature of the Western Bank front. The building on the west side of the quadrangle, and with a front to the park, is for the arts and science departments, comprising arts, physics, biology and chemistry. The building on the north side of the quadrangle, and also with a front to the park, is for the medical department, comprising anatomy, physiology, pathology, bacteriology, public health, and also medical library and lecture-rooms. The internal finish of the building is dependent upon the amount of subscriptions, but it is intended that, in addition to finishing the entrance, the great hall and the council-room in dressed stone and oak, the corridors and laboratories shall have salt-glazed brick dados and the corridor have buff-coloured facing bricks above the dados. The estimated cost of the buildings, exclusive of the library, is £67,500, and the library, if erected as designed, will cost £7,500. Messrs. Gibbs & Flockton are the architects. The perspective we illustrate is exhibited in this year's Academy. We are indebted to the "Sheffield Independent" for the loan of the blocks.—The site of the L.C.C. Fire-Brigade Station has a frontage to Euston Road of about 58ft. and to Euston Square of about 57ft. The station is built with Portland stone facings to the height of the ground floor, and above that in red brickwork, with projecting oriel windows in stone, and stone dressings to those windows immediately beneath the oriels. The accommodation provided on the ground floor is:—Engine room, 39ft. by 33ft., lined with glazed bricks and paved with grooved stable bricks, gives standing room for horsed escape, steamer and hose cart, ready for immediate use. The run-out will be across the courtyard in front of the station of the same depth as the adjoining gardens, through a gateway at the junction of Euston Road and Euston Square (Seymour Street); the run-in is on the Euston Square front through an archway into a small yard, from which the back engine-room doors open. There are stables for six horses in the rear of the engine-room, top-lighted. Provision is made for a fodder room with loft over adjoining the stalls. The watch-room is on the Euston Road front adjoining the engine-room doorway, and has a floor area of about 150ft. The recreation-room has a large bay window looking on to Euston Square, and has a total floor area of about 400ft. Adjoining is lavatory accommodation with spray bath. The third officer's private entrance is at the angle of the building, and is approached from Euston Square. It communicates directly with a lift and staircase to the third, fourth and fifth floors, where are situated the third officer's quarters. One suite of quarters for a married coachman is also on the ground floor, and adjoins the run-in. The basement extends under all the ground floor with the exception of the engine, room and stables and consists of:—Laundry fitted with six troughs, three coppers, heating chamber and six drying horses; battery room under stairs; workshop; separate storage accommodation for coal, coke, wood and oil; twelve coal stores for station officer and men; three cellars for third officer's quarters. The architect is Mr. W. E. Riley, superintending architect to the London County Council, and the work has been carried out by Messrs. Stimpson & Co., of 78, Brompton Road, the contract sum being £14,377.

Birmingham's Art Master. THE Museum and School of Art Committee of the Birmingham Corporation last week held a special meeting in order to appoint a successor to Mr. Edward R. Taylor, who will retire on June 30th from the Head Mastership of the Municipal School of Art under the terms of the Corporation Superannuation Scheme. Alderman the Right Hon William Kenrick presided. The Committee unanimously appointed Mr. R. Catterson-Smith, who has since 1901 been Head Master of the Vittoria Street School for Jewellers and Silversmiths. Mr. Catterson-Smith was born in Dublin. His father was President of the Royal Hibernian Academy. Originally a successful student and assistant teacher at the Dublin School of Art, Mr. Catterson-Smith, at the age of twenty, entered the studio of Henry Foley, R.A., and remained with him until his death. Then he became well-known as an exhibitor, especially of landscape, but also of portraiture, at the Royal Academy, and as a draughtsman in black and white. His work illustrated his fondness for Nature. In 1893 he entered the service of William Morris, who perhaps did more than anyone else towards the recent revival in England of the industrial arts. It was to assist Morris and Sir Edward Burne-Jones in the production of drawings for the Kelmscott Press that Mr. Catterson-Smith first joined them; he executed most of the "Chaucer" drawings, and designed and executed three of the borders for the "Early Paradise." Of Mr. Catterson-Smith's work in this direction Morris spoke in terms of unstinted praise. His set of "Chaucer" drawings was, in 1901, sold in London for £800. In 1892 Mr. Catterson-Smith began to work in metal. He is a member of the Art Workers' Guild and of the Arts and Crafts Exhibition Society. Visitors to the Arts and Crafts Exhibitions held at the New Gallery will recall especially his beautiful silver repoussé executed from the designs of Burne-Jones. He has also done much metal-work from his own designs. In addition, Mr. Catterson-Smith was for some time associated as a teacher with Mr. George J. Frampton, R.A., and Mr. W. R. Lethaby, then co-directors of the London County Council Central School of Arts and Crafts, and worked with Dr. William Garnett, the secretary of the Technical Education Board of the London County Council. Whilst in London Mr. Catterson-Smith also served under the London County Council as an Inspector of Art Schools and Art Classes held at Secondary Schools—about forty in all. Recently he has acted as examiner of the works submitted to the London County Council for their annual competition for art scholarships.



PLAN OF SITE AND GROUND-FLOOR PLAN.

Leeds City Square. A deputation from the Leeds and Yorkshire Architectural Society, consisting of Mr. Butler Wilson (president), Mr. Richard Wood (vice-president) and Mr. H. S. Chorley (hon. secretary) recently waited on the Improvements Committee of the Leeds Corporation for the purpose of submitting a proposal which in the opinion of the Society would materially improve City Square. The unsightly property at the corner of Quebec Street and Wellington Street—opposite the Midland Railway Station—having just been pulled down, the City authorities are about to fix the new improvement line, and in the ordinary course of things the site will be offered for sale. Before this is done, however, the architects of Leeds represented by the Association think that it would be in the interest of the city if the Corporation would adopt their suggestion that as far as possible the corner of the square at Quebec Street and Wellington Street should be a repeat of the corner of Park Row and Infirmary Street, that there should be erected on the new site a building similar to the Standard premises on the other, alike in regard to contour, sky-line and material. The space at the disposal of the Corporation, it is urged, makes the suggestion quite practicable. Its promoters claim that the symmetrical and harmonious effect on the Square will be such as could be obtained by no other means, and that it would emphasize the central position of the Post Office and the statue of the Black Prince. The city engineer (Mr. T. Hewson) wished to know i the views of the deputation would be met i the improvement line were thrown back a little further than proposed by the deputation, and Mr. Wilson said they would. The Committee instructed the city engineer to stake out the different improvement lines in question, when they will make their decision



FIRST-FLOOR PLAN. THIRD-FLOOR PLAN. FOURTH-FLOOR PLAN.

FIRE-BRIGADE STATION, EUSTON ROAD, LONDON, W.C. W. E. RILEY SUPERINTENDING ARCHITECT LONDON COUNTY COUNCIL.

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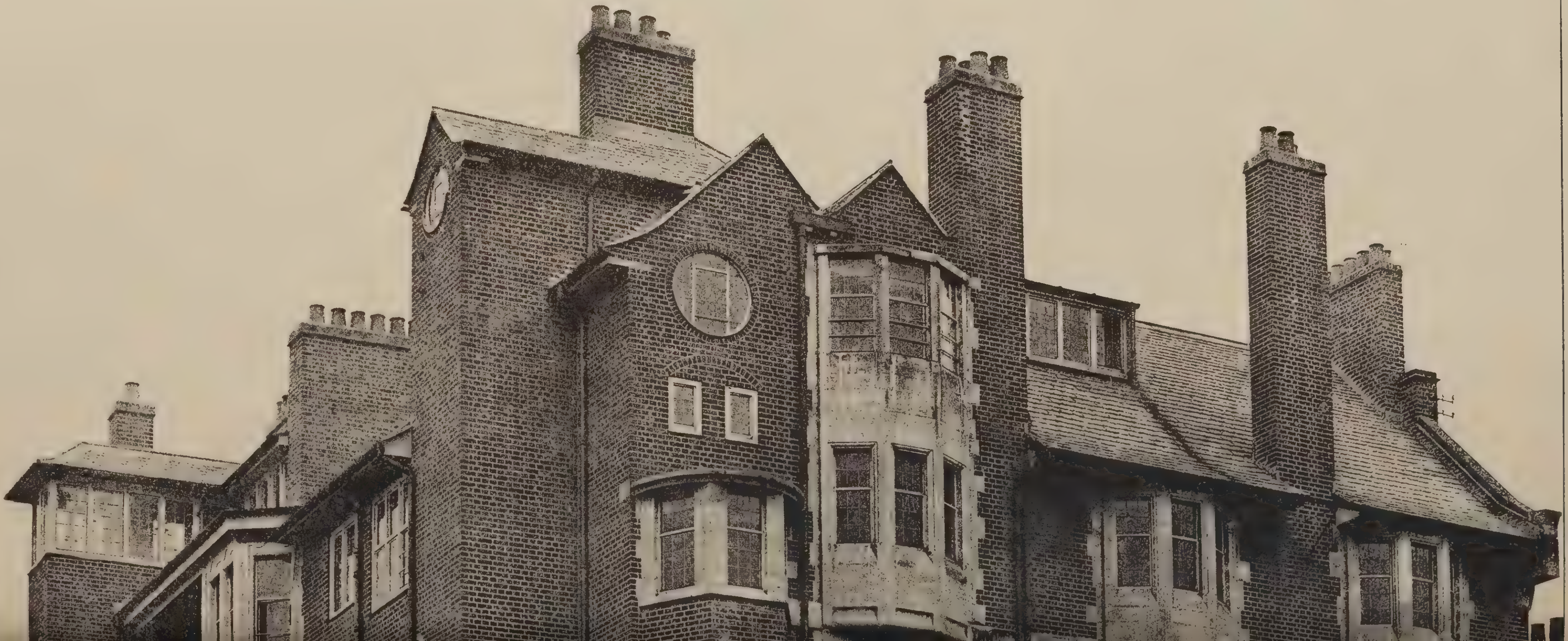

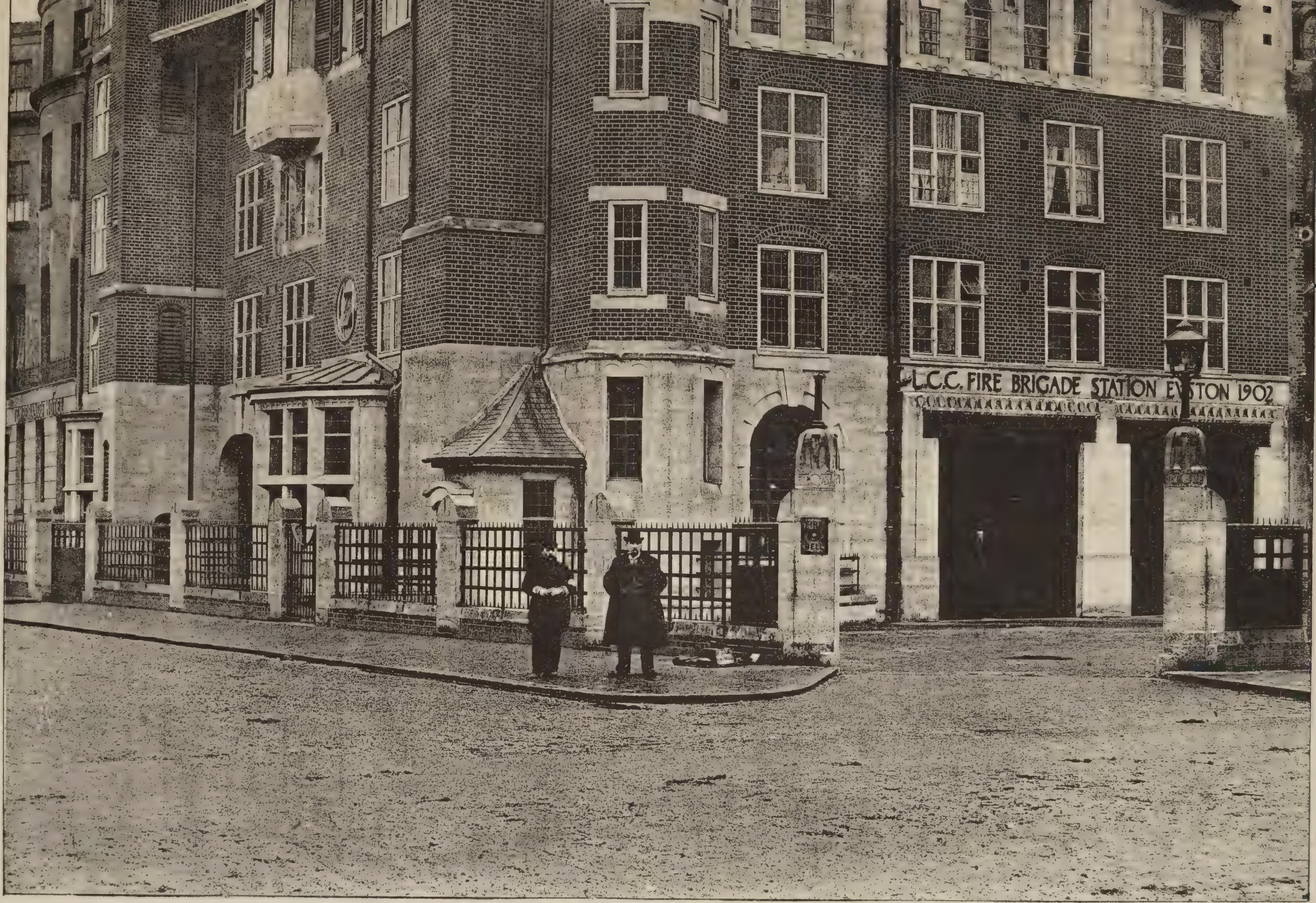

"INK-PHOTO." R. J. EVERETT & SONS, 56 LUDGATE HILL, E.C.

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KEW BRIDGE.

THE first bridge at Kew was erected in 1759. It was principally the work of one John Barnard, a carpenter, who is styled "architect" in the elevation and sections in the Kew Gardens museum. The bridge had eleven arches, seven of which were of wood, the span of the centre arch being 50ft. and the roadway 30ft. wide. The second bridge, recently pulled down to make way for the new structure opened by his Majesty the King on May 20th, was begun in 1783 and finished four years later. The span of the centre arch was 66ft., the next on each side 55ft., the next on each side of these 45ft. 10in., and the shore arches 38ft. 4in., a total waterway of 344ft. 4in. The new bridge is of Scotch granite. There are only three arches proper—the central arch, with a span of 133ft. and a rise of 24ft. 6in., and side arches of 116ft. 6in. span and 21ft. 6in. rise. At each end are small land arches of 18ft. span and 15ft. headway. The arches, it is said, are flatter than those of any elliptical stone bridge of any importance, and the ratio of rise to span is only 1 to 5·42—a curious contrast to the bridge just removed. The joints are rusticated, and over the piers are four granite shields with the arms of Middlesex and Surrey. The total cost, including compensation and purchase of land, was nearly a quarter of a million sterling. The bridge was built with timber cofferdams, the foundations going down about 30ft. below the cupwaters. Sir John Wolfe Barry, K.C.B., and Mr. C. A Brereton, M.I.C.E., were the engineers. On the contract drawings the width is shown as 45ft., but this was afterwards increased to 55ft.; London Bridge will be 65ft. when widened, Blackfriars Bridge is 75ft. wide and Westminster Bridge 85ft. wide. Altogether the new Kew Bridge has taken about four years to build, including pulling down the old bridge and putting up a temporary one. The trowel and mallet used by the King in setting the coping stone of the new bridge were presented to his Majesty by the engineers: they were made by Messrs. Mappin Brothers from the designs of Mr. Brereton, the mallet and the handle of the trowel being fashioned from one of the oak piles of the first bridge at Kew—the wood was remarkably sound after having been in the water for nearly 150 years. After setting the stone, its accuracy was tested by a spirit-level made in the form of an exact model in silver of the new bridge to a scale of 50ft. to one inch, and having a small crimson spirit-level fixed in the roadway over the centre arch.

TECHNICAL BOOKS.

READERS will doubtless be interested in the lists of books on architecture, building and kindred subjects which we are now publishing. There are to be three of these lists, the first of which was given in our last issue, while the second will be found on p. xi of this issue. The lists have been compiled in response to numerous requests for the names of suitable books on the several subjects, and for the special benefit of our readers we have made arrangements to supply them at their published prices, *post free*. The utility of these lists, showing at a glance all the best books that have been published, is apparent; and we are glad to say that readers are already availing themselves of the opportunities offered, thus proving their appreciation of the trouble we have taken on their behalf. As will be seen, the books are grouped together under different headings, so that the works on any particular subject can be referred to with the greatest ease.

Correspondence.

African Oak.

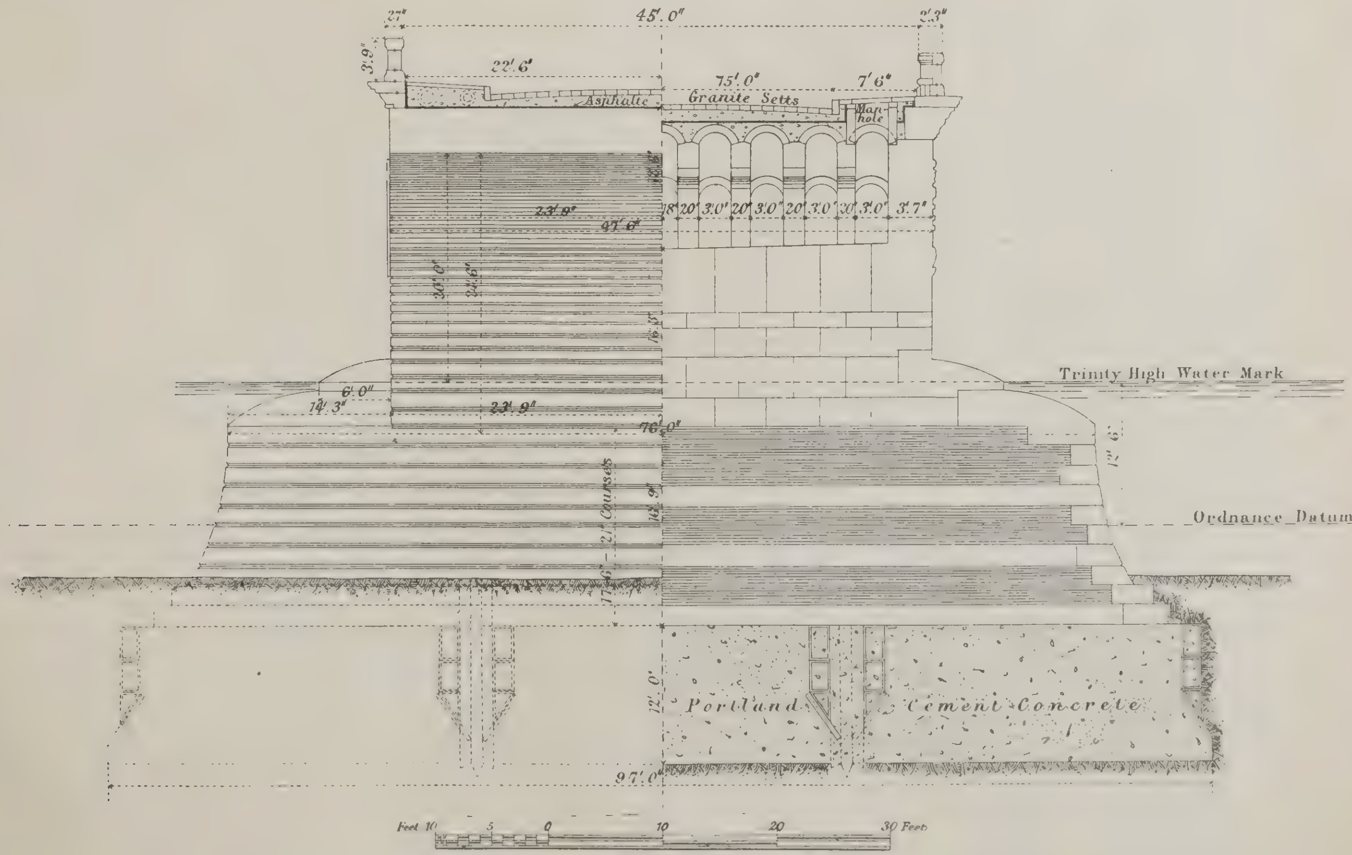
To the Editor of THE BUILDERS' JOURNAL.

EXETER.

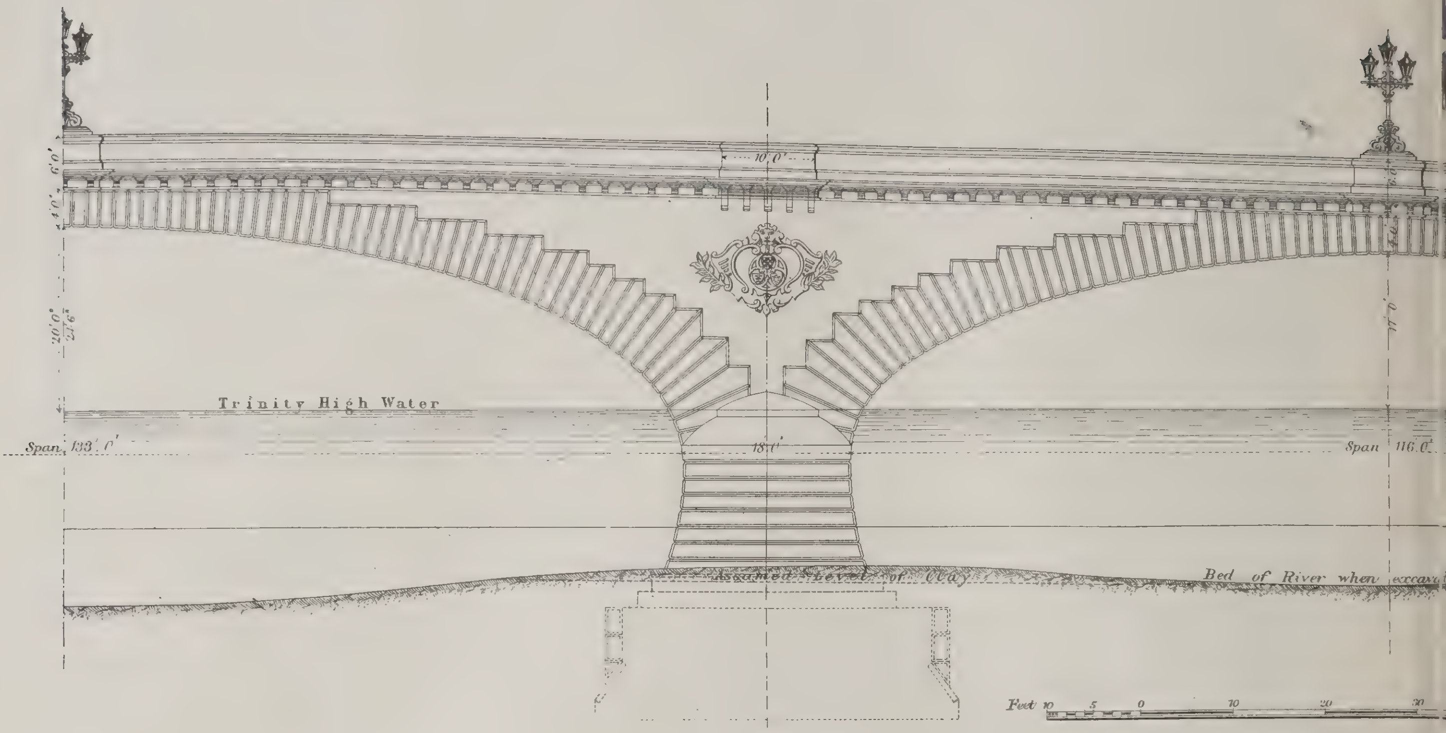
SIR,—No doubt your numerous readers will wonder what a correspondent means by recommending African oak as the best kind for exterior work. And this with reason, as very few people know what African oak may be. Certainly, no such oak has a market in this country nor is used in England. I happen to have in my grounds a fine specimen of that particular kind, but it is a distinct rarity. This species of oak is an evergreen, known in the botanical world as "Q. Libani *Oliv.*," but it is a tree that is not sufficiently large in the butt to be of any practical value to the timber trade. Neither does it grow to any great extent upon the Dark Continent.

Undoubtedly, there is no oak for exterior work to come up to our British oak (*Ròbur*). At the same time—especially when used in great thicknesses—it is bound to "open," however well it may have been seasoned.—Yours truly, HARRY HEMS.

The wood we referred to was that known commercially as African oak or teak (the former being the most common name), the botanical name of which is Oldfieldia Africana. This wood comes from Sierra Leone, and there is only a small supply in the market. It is to be had in quite large enough sizes for gate posts or fencing, for which we recommended it, seeing that the trees grow to a height of over 30ft. or 40ft. with a girth of 7ft. or 8ft. It is a dark red wood, very hard, strong, rigid, non-corrosive of metals, fine, close and straight in grain, free from shakes, shrinks and warps very little, and is very durable. It is difficult to work, however.



THE NEW BRIDGE ACROSS THE THAMES AT KEW: TRANSVERSE SECTION.
SIR JOHN WOLFE BARRY, K.C.B., AND C. A. BRERETON, M.I.C.E., ENGINEERS.



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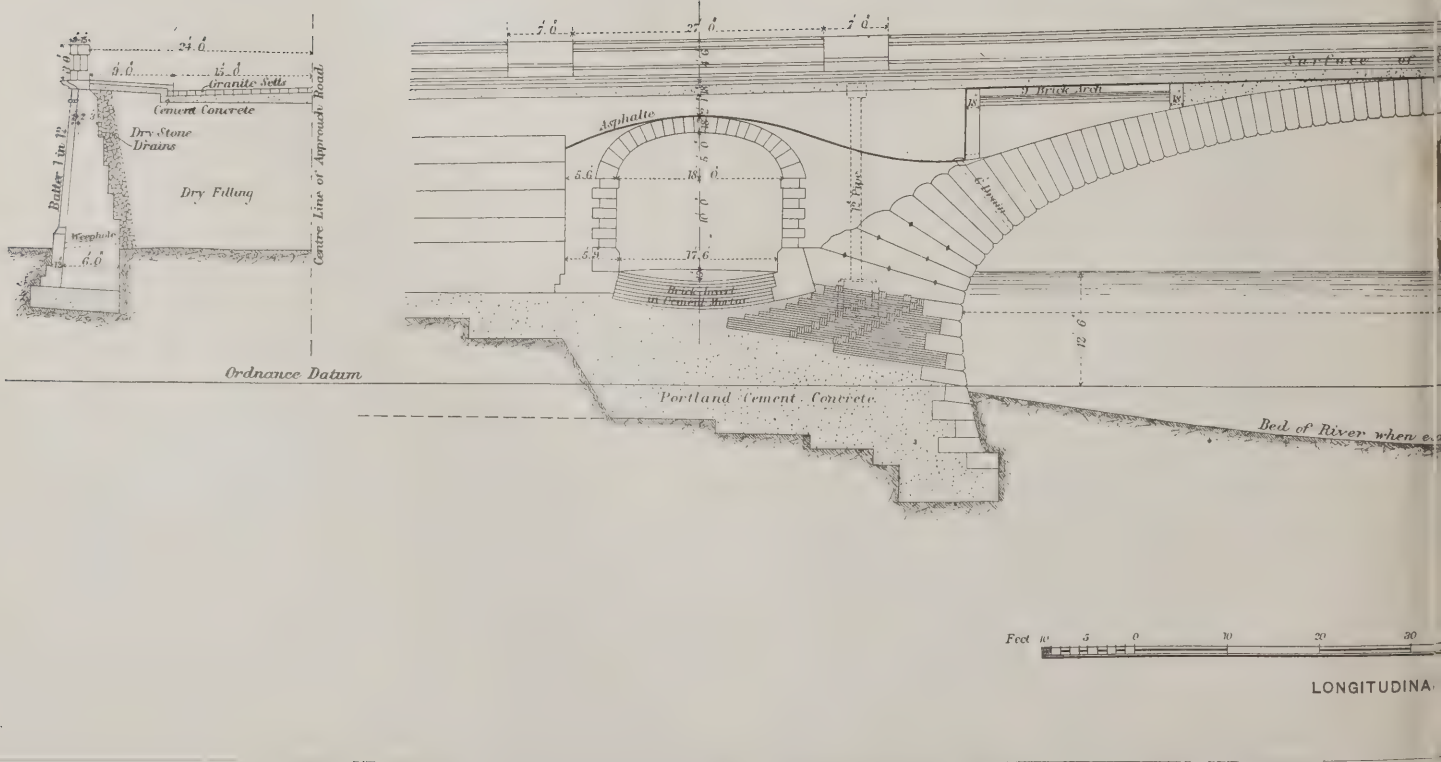

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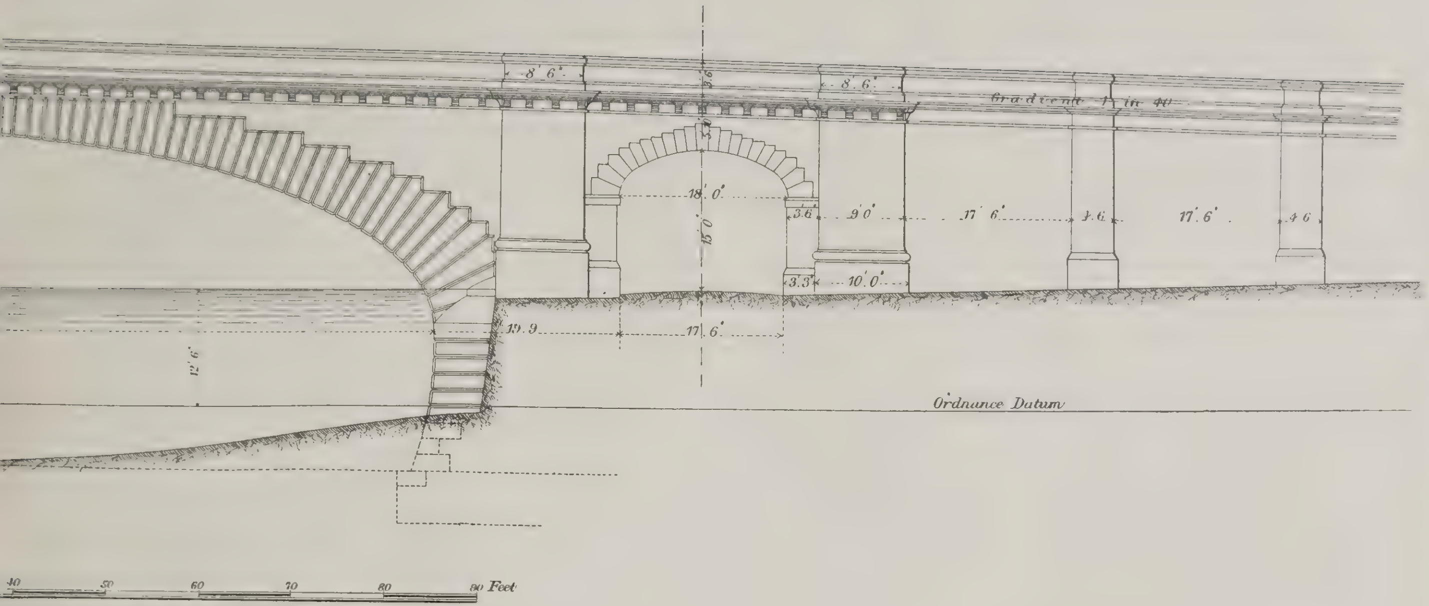
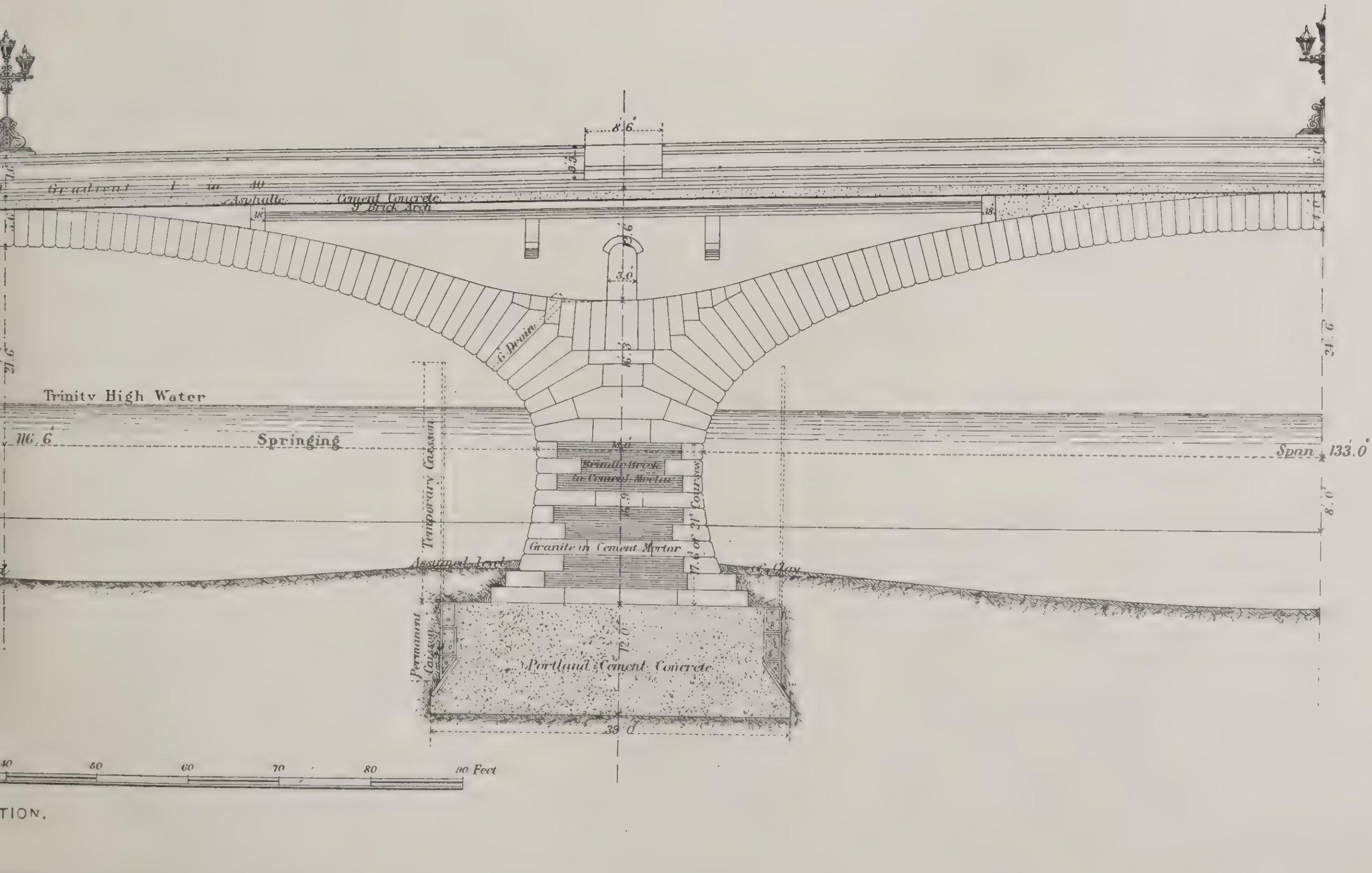
THE NEW BRIDGE ACROSS THE THAMES AT KEW. SIR JOHN W





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BARRY K.C.B. AND C. A. BRERETON, M.I.C.E., ARCHITECTS.

Keystones.

A Stained-glass Window has been placed in the east end of All Saints' Church, Chertsey.

A new Hotel on the East Coast, named the Alexandra, has been opened at Dovercourt. The owner, Mr. T. I. Moran, was the builder, and Mr. G. Sherrin was the architect.

Malmesbury and District County Technical and Secondary Schools were opened recently. Mr. Robert E. Brinkworth, F.S.I., of 16, Old Bond Street, Bath, and of Chippenham, was the architect, and Messrs. Smith & Light were the contractors. The cost, inclusive of fittings but exclusive of the cost of site, was between £4,100 and £4,200.

New Municipal Buildings at Woolwich are being erected. The site has cost £15,000, and has an area of 9,000 sq yds. The buildings have been designed by Mr. A. Brumwell Thomas, of Westminster. The contract price was £50,000, the builders being Messrs. J. E. Johnson & Son, of Leicester. The buildings will consist of a basement and three floors, with a dome and a clock tower rising to a height of 140ft.

The King's Sanatorium is to be erected on a site at Lord's Common, Eastbourne, six miles south of Haslemere, and about three from Midhurst, 150 acres in extent. Mr. H. Percy Adams, F.R.I.B.A., the architect appointed by the Advisory Committee, who has recently by their direction made a very careful study of sanatoria both in Germany and Switzerland, is now preparing his plans.

Architect as Blackmailer.—According to the "Winnipeg Free Press," a well-known architect of Winnipeg, Mr. S. A. Barber, who designed the City Hall, the Leland Hotel, MacIntyre Block, St. John's College, and other buildings in that city, has been remanded on a charge of attempting to blackmail Mr. D. C. Camille Brousseau, a wealthy wholesale grocer at Montreal, and endeavouring to extort a sum of 13,000 dollars.

Clapham Parish Church, on Clapham Common, S.W., has had a new chancel and a chapel added to it from designs by Prof. Beresford Pite, F.R.I.B.A. This church is of the Queen Anne style of architecture, and the new parts have been built to correspond with the rest of the sacred edifice. The old east window of stained glass has been placed in the south wall of the chapel, and two square pillars of Verona marble with white marble bases and alabaster capitals are on either side of the chancel. The electric light has been installed, and altogether the work has cost upwards of £7,000.

The Liverpool Cathedral Petition Committee states that the cathedral movement seems to have for the moment become a somewhat parochial effort to provide a large church for the more special benefit of one district of Liverpool, and that not a particulary central or populous one. As regards Mr. Scott's design, the Committee say that if the religious needs of the present century can be perfectly met by a mediæval form of building, and the æsthetic demands of the twentieth century can be satisfied by lifeless copies of thirteenth-century craftsmanship, then there seems likelihood that the combined efforts of two such faithful disciples of the Gothic Revivalists of the past century as Mr. Scott and Mr. Bodley will be capable of producing that result. They further express themselves satisfied that in due time it will be fully realized by all that there are nobler and more complete ideals possible than these, and they are encouraged by the work and the designs of men like Prof. Beresford Pite, Mr. Leonard Stokes and others to believe that there are living architects capable of fulfilling them.

The Piccadilly Colonnade, with the widening of the thoroughfare between Arlington Street and the Green Park to 85ft., was sanctioned at last week's meeting of the London County Council. The Westminster City Council will contribute £4,000 towards the improvement.

St. Anthony's Elementary Catholic Schools, Newsham Street, Liverpool, are about to be largely extended from designs by Mr. C. Walker, architect, 26, Eldon Square, Newcastle-on-Tyne. Accommodation will be provided for about 2,000 children.

Mr. Samuel Rawlinson, builder, &c., of Swinton, by the will of the late Lady Rawlinson, of West Kensington, London, has just come into a fortune of about £10,000. The late Sir Robert Rawlinson, who predeceased his wife, formerly resided in the Manchester district, and for many years was foreman mason in the Bridgewater Trustees' yard at Worsley.

Discoveries at Caerwent.—The exploration at Caerwent, which has been continued during the winter, has resulted in further important discoveries. A small building with an apsidal end, which it is thought may have been a Christian church, has been unearthed at the north gate. Near the gate, in an adjacent field, have been disclosed the remains of an amphitheatre about 150ft. in diameter. The consent of the parish council was obtained to excavate on the village green, and here, it appears, was the centre of the Roman town.

The Manchester Society of Architects on Saturday, May 23rd, under the leadership of Mr. G. W. Lord, made a sketching visit to Mobberley Church, Cheshire. The rector, Rev. H. L. Mallory, explained various points of interest. By the kindness of Mr. Ernest Leycester, Mobberley Old Hall was also visited, and several sketches made of it. The party numbered about fifteen. On Tuesday evening, May 26th, about sixty members visited the new Midland Hotel, Manchester, by kind permission of the architect, Mr. Trubshaw. The visitors were shown around by Mr. Elwell and Mr. Lund, who explained the general design of the building and the elaborate warming and ventilating arrangements.

Bridges on Tram Lines.—Mr. G. A. T. Middleton, A.R.I B.A., writes in reference to the new L.C.C. electric trams in South London: "I have seen two gentlemen narrowly escape death, one at Balham and the other at Clapham Road railway bridge. The new cars have been so constructed that a moderately tall man getting on just before either of these bridges, or rising to get down directly after, would almost certainly hit his head against the girders. May I suggest a simple remedy—that the present cars be replaced by others a few inches lower, and be themselves transferred to other lines now being constructed by the London County Council on which no such low bridges occur, so soon as these lines are opened."

Society of Architects.—At the meeting of this Society held on May 21st the following were elected as Members:—Messrs. F. G. Fraser (Liverpool), S. H. Healing (Gloucester), A. G. Howard (Cape Town), E. P. Laycock (London, N.), John Love (Fleet), C. R. Mitchell (London, W.C.), A. W. Nye (Brighton), Frederick Quy (Cape Town), P. B. Tubbs (London, E.C.) and W. F. Wills (Derby). As a Student: Mr. R. J. Smith (Weston-super-Mare). After the transaction of the formal business, the president, Mr. Silvanus Trevail, gave an account of his impressions of architectural rambles on the Continent, illustrating his remarks by a large number of lantern slides. On May 21st the Society held a field day at Rochester, the party numbering about seventy. They visited Eastgate House, the Cathedral, Restoration House, the Castle and Cobham.

The new Church of St. Thomas, East Kirkby, Notts, was consecrated recently. The cost will be nearly £6,000.

Bolton Hall.—A start has been made with the rebuilding of Lord Bolton's Wensleydale seat, which was burnt down on October 15th last year. The contract for the work has been let to Messrs. Joseph Howe & Sons, of West Hartlepool. The old Georgian style of architecture is to be rigidly adhered to in the new building.

The Edinburgh Architectural Association recently visited Stirling Church and Castle. Mr. Morris, town clerk, and the Rev. Mr. Smith received the members at the church, and Bailie James Ronald, Stirling, acted as leader, and conducted the party over the east and west portions, and gave descriptions of the building, the date of erection, division into two churches, and the various alterations and restorations. The members were afterwards enabled to thoroughly inspect the Castle. Mr. J. T. Baillie, architect, Edinburgh, acted as leader, and read an account of the buildings. At the close cordial votes of thanks were accorded to the provost and magistrates, the ministers, Bailie Ronald, Colonel Hunt and Mr. Baillie.

The Church Crafts League held its half-yearly general meeting on May 25th last in the hall of Clifford's Inn. The Dean of Westminster presided. A lecture on "Altars—their Arrangement and Ornaments" was delivered by Mr. F. C. Eccles, who traced the gradual development of the Christian altar of primitive times into the altar of the mediæval type found in the illuminated manuscripts which have come down to us. By means of a series of lantern slides he showed that the modern artist would find plenty of scope for his inventive genius, even if restricted to the traditional treatment of the holy table imposed upon us by the "Ornaments Rubric." He strongly deprecated the prevailing tendency of making the altar insignificant by drawing the eye of the observer from the table itself to an erection of candlesticks and pots of flowers behind it.

Obituary.

Mr. Joseph Bathurst, builder, of Rochester, died recently at the age of seventy-six years.

Mr. John Wheeler, a retired builder, who has passed away at Wantage at the age of eighty, enjoyed the distinction of having restored no fewer than sixty churches in Berks and the adjoining counties during his business career. A good deal of his work was done for the Ecclesiastical Commissioners.

Mr. Jacob Parkinson, of South Beach, Blackpool, joiner and contractor, died recently at the age of sixty-six years. He went to Blackpool about thirty years ago from Lytham. He was with Mr. R. Braithwaite, joiner, Temple Street, for some time, and afterwards commenced business on his own account.

Mr. William Davidson, quarryowner and builder, of New Pitsligo, died recently at the age of sixty years. Amongst the large contracts deceased was engaged in building were the West Parish Church, Fraserburgh; Pitsligo Parish Church; Free Church, New Deer; Town and County Bank buildings at New Deer and Strichen; Troup House, Pennan, &c.

Mr. David Buchan, a prominent Perthshire builder and contractor, died at his residence, Tomaknock, Crieff, last week at the age of fifty-eight years. He succeeded his father as a builder in Crieff. In the course of his business career he built a large number of important blocks of buildings, the largest, as well as the most recent, of which are the Police Buildings in King Street, Crieff. He was also lessee of the Laggon quarry on the Ochtertyre estate.

Builders' Notes.

The new Trallwn Schools at Pontypridd are being fitted with Messrs. F. A. Baker & Co's. patent exhaust ventilators and inlets.

The New Infectious Diseases Hospital, Scarborough, has been supplied by Messrs. E. H. Shorland & Brother, of Manchester, with their exhaust roof ventilators and special inlet and outlet ventilators.

Caen Wood Towers, the historic mansion at Highgate now the property of Mr. C. F. Cory Wright, J.P., has been entirely re-decorated, the floors covered with Mainzer's improved parquet and the conservatory paved with Arrolithic mosaic of special design. The alterations have been carried out under the supervision of Mr. G. E. Nield, A.R.I.B.A., of the Outer Temple, 222, Strand, W.C.

Southwark Bridge proposed to be lowered.—The Bridge House Estates Committee has prepared a scheme for the reconstruction of Southwark Bridge, which is at present almost unused owing to the severity of the gradient on the approaches from the City side. Under the new scheme, the crown of the present structure will be lowered 7ft. with the result that the gradient will be reduced to 1in. in 50in. The estimated cost of the scheme is over half a million, which will be paid out of the Bridge House Estates Funds.

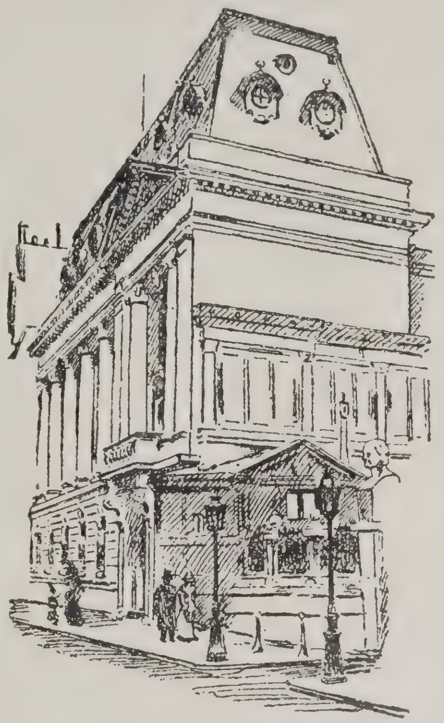
Fireproof Floors.—The Columbian Fireproofing Co., Ltd., 37, King William Street, E.C., have secured the contract for the whole of the steel construction and erection and fireproof floors for the new premises for Messrs. Laurie & McConnel, Ltd., general providers, of Fitzroy Street, Cambridge, whose premises were destroyed by fire some time ago. This will be the first absolutely steel frame building of the warehouse class erected in England. The architect is Mr. R Frank Atkinson, 8, Sackville Street, Piccadilly, who has designed the new buildings in Oxford Street for Messrs. Waring, Ltd.

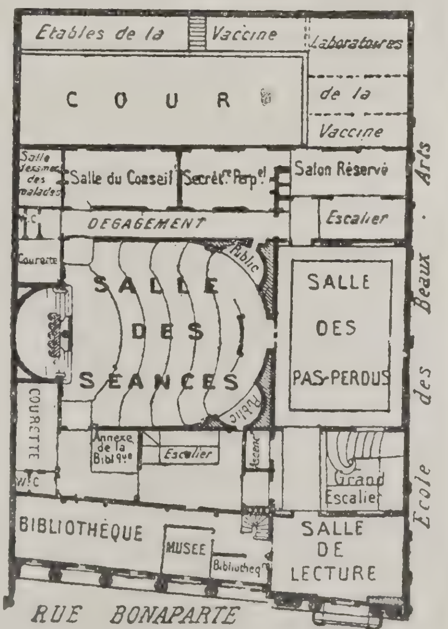
Garden Requisites. — Messrs. Barnard, Bishop & Barnards, Ltd., of Norfolk Iron Works, Norwich, have just issued a small catalogue of garden requisites. It is fully illustrated, and contains prices and particulars of the following among many others :—Garden seats, tables, water barrows, tanks, hose reels, garden rollers, lawn mowers, espalier fittings, wire lattice, garden frames, flour and corn bins. It is these things out of the general run which an architect usually finds difficulty in obtaining prices for or particulars of ; thus this catalogue gives the stock sizes which are often desired in planning so as to allow room for them in corners, &c.

Work in South Africa.—Advertisements have recently been published inviting applications from house carpenters and joiners to proceed to Port Elizabeth, South Africa, as, owing to the scarcity of good workmen, the Master-Builders' Association of that town have instructed the agents in this country to engage suitable hands. The South African steamers making Capetown their first port of call, workmen are very frequently tempted by the higher rate of wages offered up country to engage themselves, when, as a fact, the rate of living in Port Elizabeth, the second port of call, is so much cheaper than in Johannesburg that the standard rate of wages there, 1s. 10d. per hour, goes much further than even the higher rates paid in such a place as Johannesburg. Besides this, workmen inland are often stopped for want of material getting up from the coast, which is not the case at Port Elizabeth, where the material is landed. At Port Elizabeth a very large number of buildings are being erected, and everything tends to strengthen the opinion that work will become more plentiful as the country settles down and assumes its normal condition.

ACADEMY OF MEDICINE, PARIS.

THE new building for the Academy of Medicine at Paris which replaces the confined and inconvenient temporary quarters in the Rue des Saint-Pères in which that institution has been lodged for the last fifty-three years was formally opened by the President of the French Republic a month or so ago. The new Academy of Medicine is situate in the Rue Bonaparte, adjoining the courtyard of the Ecole des Beaux-Arts, on the site of a former branch office of the Mont-de-Piété, or municipal pawnbroking establishment. It was commenced in the month of May, 1899, M. Rochet of the Paris Poor Law Board (l'Assistance Publique), being the architect. The vestibule to the council-chamber is adorned with the celebrated picture by Muller representing Pinel removing the fetters from the patients at the Bicêtre, and two other pictures, one being a copy of Rembrandt's Lesson in Anatomy and the other Harvey demonstrating the circulation of blood before Charles I. The vestibule is also decorated with busts of academicians and portraits of professors. The council-chamber contains 110 seats, each seat being furnished with a desk of oak coverd with red leather. There is a balcony round the hall for the public, a portion of which is reserved for the Press, approached by a separate staircase. In the retiring-room attached to the council-chamber is a portrait of Andreas Vesalius (1514–64), the founder of the study of anatomy, attributed to Titian. The library and reading-room, which are of considerable extent, occupy the whole of the frontage on the Rue Bonaparte. The total cost of the building, including the value of the site, was £65,080, the cost of site having been £20,540, making the nett cost of the building £44,540.





L.C.C.

Works Department and Contractors.

AT last week's meeting of the London County Council the Works Committee presented a long report in reference to the superstructure of the new asylum at Horton Manor, Epsom. The work was executed by the Works Department, and it has cost about £39,000 more than the amount of the architect's final estimate. The Committee attributed this excess to the following causes :—(1) Error of judgment on the part of the late manager of works in undertaking the work and insufficiency of accepted estimate ; (2) refusal of local authority to allow temporary railway for carriage of material ; (3) rise in prices of materials and in wages ; and (4) scarcity of labour. The estimate for the work was £291,110, and the actual cost £330,500.

Sir John McDougall said the lowest tender was £12,000 above the architect's estimate, and as the Department had saved £7,000 under certain heads, here was roughly £20,000 to set off against the £39,000 excess. Besides, a contractor would have claimed extras, but the Department got none. It was also calculated that the Department had lost £11,000 owing to being refused permission by the local authority to construct a temporary railway for cartage.

Mr. White said he knew as a fact that the contractors who tendered for this work had agreed among themselves to put an extra 5 per cent. on their charges because of the onerous conditions of the Council.

Mr. Burns said the so-called onerous conditions were simply good work and the wages prevailing in the trade with equality of treatment for unionist and non-unionist. He reminded Mr. White that the Asylums Board some time ago gave out the work of building Brook Hospital to a contractor at £194,000. It cost in the end £264,000, and although Mr. White was a member of the Asylums Board he said nothing about this excess at the time. Since the Works Department was established the Council had remitted to it work estimated at £1,486,000, the actual cost of which had reached £1,548,000, or £62,000 above the estimate. This only represented an excess of 4 per cent. on this great mass of work, and he maintained that the Council had got 14 per cent. better quality in the work. If they counted in the profits made by the Department on jobbing works, and allowed for the sums paid off in interest and capital, the excess would be found to be no more than £16,000, or 1 per cent. The Department was overloaded with establishment charges such as no private concern would stand. These had been made necessary by the irritating restrictions imposed by the Moderates. Over £178,000 had been spent on establishment charges alone. These were monstrous charges, such as no contractor could bear. For his part he was prouder of nothing more than of the work he had done in association with the Progressive Party in setting up the Works Department and freeing London from the toils of contractors.—The Council approved the report.

MODERN LONDON BUILDINGS.

(Continued from p. 195, No. 431.)

A list of public and semi-public buildings in the E.C. district was published in our issue for March 25th, of domestic and religious buildings, colleges and schools in the same district in the issue for April 1st, of business premises in the same district in the issues for April 15th, April 29th and May 13th, and of hotels, restaurants, &c., in the same district in the issue for May 13th.

E. DISTRICT: PUBLIC AND SEMI-PUBLIC BUILDINGS.

BUILDING.	ARCHITECT.	APPROXIMATE COST.	REMARKS.
1875.		£	
Billingsgate Market -	Horace Jones, City Architect.	—	The area of ground covered by the market is 40,000ft. super. The building has a glass and iron roof, and is carried out in the Italian style.
"Boyd" Workmen's Institute, Victoria Docks.	Giles & Gane	4,000	The Institute contains a lecture hall to hold 600 persons. It is built of brick, with Farleigh Down red-bed stone, and red brick dressings
Fire-Brigade Station, Commercial Road.	George Vulliamy	—	The accommodation provided is for three engines, two escapes, one coachman, twelve firemen, with stabling for five horses.
1876.			
Fire-Station, Isle of Dogs -	- - -	3,987	
1877.			
East London Hospital for Children, Shadwell.	H. J. & C. A. Legg	13,000	There is an administrative block, with dispensary attached. The ward blocks are 70ft long. giving 1,000 cub. ft. of air-space per child. There is an isolation building for infectious cases, and in the rear are laundry, post-mortem room, operating rooms, and a small museum The hospital contains accommodation for ninety-two patients.
1879.			
Town Hall, Limehouse -	A. & C. Harston	10,000	The frontage is 80ft., Italian in style. White bricks were used for facings, and Portland stone for dressings. There is a board-room on the first floor, 70ft. by 40ft.
1880.			
Mortuary at Bethnal Green	Gathercole, Vestry Surveyor.	1,357	Luton grey brick and Portland stone were used for the walls, the floors being of patent Victoria stone.
1882.			
Mariners' Institute, Canning Town.	Bryne & Crombie	—	Red brickwork is used for the front and stock bricks for the side and back walls. The cabins are 8ft. by 5ft. by 7ft. 6in. high.
1885.			
Paragon Theatre of Varieties, Mile End Road.	Frank Matcham	—	The auditorium is 100ft. long by 60ft. wide, or with promenades 100ft. wide, by 60ft. high. The stage opening is 34ft. square, the depth being 64ft.
Working Lads' Institute, Whitechapel Road.	George Baines	4,716	The refreshment-room is 24ft by 13ft ; the gymnasium, also on the ground floor, is 33ft by 27ft. by 17ft. high. On the first floor is the reading-room, 30ft. by 30ft, to accommodate 150 boys, leading out of which is a students' room. The second floor contains classrooms, and the third bedrooms and dormitories. The front is in the Renaissance style in red brickwork, with Portland and Ancaster stone dressings.
1886.			
Great Assembly Hall, Mile End Road.	Boulnois & Warner	—	The hall is designed to accommodate 5 000 persons, being 130ft. by 70ft. Three entrances from Mile End Road lead into an octagonal hall of 44ft. sides by 34ft. high. There are also a coffee-palace and book-saloon. In the hall are two tiers of galleries, a large orchestral-sloped platform, and an organ at one end.
London Hospital Medical College (Rebuilding).	Rowland Plumbe	—	The facings are of yellow brickwork, with red brick architectural features, the style being free Renaissance.
1887.			
People's Palace for East London, Mile End Road.	E. R. Robson	100,000 (including site).	The style of the building is somewhat Oriental in character, though Renaissance in detail. Stock bricks are used for the general walling, with red brick edgings Portland stone being used for dressings, columns, arches, &c. The building contains the Queen's Hall, library, technical school, lecture-rooms, workshops, swimming baths, &c. The library was opened two years later. It is octagonal in shape, being 76ft. 6in. across. It cost £10,000.
St. George's-in-the-East Workhouse, New Buildings, Prince's Street, Old Gravel Lane.	Wilson, Son & Aldwinckle.	15,000	The additional buildings provide 198 beds. The block is of five storeys, containing wards 69ft. by 27ft. Stock bricks were used for the halls to harmonize with the existing buildings.
1888.			
Dr. Barnardo's Home, Additional Building, Bower Street, Stepney Causeway.	R. H. Hill	—	The building covers a ground area of 135ft. by 60ft. On the ground floor are swimming bath, library, uniform-room and playroom. The first floor contains classrooms and the director's and secretary's rooms. The second floor contains a gymnasium 110ft. by 56ft, and the third floor store-rooms The general walling is of stock brickwork, Brown's pressed bricks being used for arches and strings. The doorway and mullions are of Drake's artificial red stone. The building measures 81ft. to the ridge and 57ft. to the cornice.
Dr. Barnardo's Infirmary, Stepney Common.	Ebenezer Gregg	8,500	The basement floor contains a dispensary, waiting-room, lavatory, kitchens and linen-rooms. On the ground floor are reception-room, girls' playroom, ward operating room, linen-room, bathroom and lavatory. The first, second and third floors contain the matron's sitting and bedrooms, nurses' room, wards, bathrooms, &c.
Fire-Brigade Station, Woolwich Road, Silvertown, West Ham.	Lewis Angell	—	
1889.			
Bethnal Green Board of Guardians' Workhouse Schools, Leytonstone.	A. & C Harston	—	Twelve houses for boys and girls form a quadrangle 300ft. by 224ft. The end of the quadrangle is bounded by a building containing school classrooms, and in the middle is a building containing the dining-hall.
1890.			
Baths for the parish of St. George's-in-the-East.	Keith D. Young	—	The swimming-bath measures 73ft. by 30ft. There are forty-three private baths and a residence for the superintendent.
Police Station, Leman Street.	J. Dixon Butler, Surveyor to the Metropolitan Police.	—	Ample accommodation has been provided for the public service and for quarters for married constables. The buildings are of red gault bricks, red Mansfield stone having been used for the entrances and dressings. The roof is of steel troughing covered with concrete and asphalt.
1891.			
Additions to the London Hospital, Whitechapel Road.	Rowland Plumbe	16,000	On the right side are the waiting- and receiving-rooms, rooms for the examination of patients and for nurses. On the left side the chief apartment is the students' dayroom. On the first floor is the chapel, and on the second surgical and clinical theatres, both of which are 40ft. by 23ft., top-lighted. The chapel is 80ft. long.
1892.			
Public Baths and Washhouses, Bow.	Harnor & Pinches	28,000	The buildings have a frontage to the Roman Road. There are two swimming baths, one 90ft. by 30ft. and the other 87ft. by 30ft., the larger provided with a gallery to hold 300 persons. There are forty compartments in the washhouses.
Whitechapel Free Public Library and Museum, High Street, Whitechapel.	Potts, Son & Hennings.	6,454 (given by Mr. Passmore Edwards).	The site is 131ft. long and 46ft. wide. The entrance is in the centre of the front, and has on the left the lending library, and on the right ladies' and boys' rooms. In the rear is the large reading-room, 45ft. by 69ft. A staircase gives access to the reference library. The lending library and store are placed in the basement. Beyond the staircase is the commissioner's room and the museum, which is top-lighted and measures 45ft. by 30ft. The front is faced with red Stanstead brick and terra-cotta dressings.
1893.			
Clock Tower. Peoples' Palace, Mile End Road.	E. R. Robson	2,000	This tower is constructed of clean-hewn Portland stone, with granite foundations.
1894.			
Poplar Accident Hospital, East India Dock Road.	Rowland Plumbe	—	The existing buildings were modified. The additional building contains, in the basement an out-patients' department, with surgeon's-room, waiting-room, examining-room and dispensary, while the three floors above form three wards, each arranged for twenty beds. On the floor above them are the kitchen, sculleries and some bedrooms.
Poplar Union Board Room, Administrative Block, Dispensary and Relief Offices, North Street, Poplar.	Walter A. Hill & Son	—	The buildings occupy a corner site, with frontages of 67ft. and 120ft. respectively, built in red brick and Portland stone.

E. DISTRICT: PUBLIC AND SEMI-PUBLIC BUILDINGS—*cont.*

BUILDING.	ARCHITECT.	APPROXIMATE COST	REMARKS.
1894—*cont.*		£	
ublic Hall, Barking Road, Canning Town.	Lewis Angell	17,984	The building includes two main floors and has a façade of 73ft., the height from the ground to the pediment being 73ft The building is classic in character, freely treated, the materials used being red brick and Portland stone On the left side of the ground floor is the minor hall, 49ft. by 24ft. On the right side of the main corridor are situate public offices, and a committee-room, 28ft. by 18ft., is provided at the end of the corridor. The large hall on the first floor is 80ft by 50ft, with a height of 35ft.; the gallery and stage add 38ft to the length. Accommodation is provided for 1,700 persons.
ublic Library, High Street, Poplar.	J. & S. F. Clarkson	—	The frontage of the building is 100ft., and the depth a little over 100ft. All the public rooms are on the ground floor. The public hall, to seat 200 persons, was temporarily omitted, for want of funds. The librarian's house occupies the one- and two-pair storeys of the front central block. The exterior is of stock brickwork and Portland stone, and the interior is finished in adamant plaster.
eamen's Mission Institute East India Dock Road, Poplar.	Sir Arthur Blomfield & Sons	13,500	The main institute, which holds 550 men, is for purposes of social recreation, lectures concerts and temperance meetings. Over this is a room for the officers and apprentices of the Mercantile Navy, with three classrooms. Adjoining the institute is a coffee bar. The building is of red brick and Bath stone.
1895.			
'he "Passmore Edwards Wing" West Ham Hospital.	Lewis Angell	3,800	The extension consists of three storeys—two wards, each containing 12 beds: the third floor containing 10 cubicles and a common room for the nursing department.
1896.			
orough Theatre, High Street, Stratford.	Frank Matcham	20,000	The theatre is built on the cantilever principle without internal columns, and is seated for 3,500 persons. The exterior is Elizabethan in style, and is carried out in dark-red bricks with stone dressings. The stage is 45ft. by 35ft., with a width of oft.
ublic Baths, Goulston Street, Whitechapel (Extension).	Bruce J. Capell	14,000	The second-class swimming bath was extended 28ft, and a swimming bath for women, 66ft. by 27ft. added; 130 dressing boxes have been provided as well as twenty-seven first- and second-class private baths for women. Ninety-one baths are provided, on the first floor, for men, and on the same floor rooms have been added for the superintendent. The exterior of the building is of brick, with Portland-stone dressings.
1897.			
ambridge Theatre of Varieties, Commercial Street.	H. Percivall	25,000	The hall is in the Moorish style, and is built of red brick, with Bath-stone dressings. It accommodates 2,500 persons. Every part of the building is provided with two distinct exits and fireproof staircases The pit and stalls are about 10ft. below street-level; the first circle is level with the street, and with a gallery above.
hapel, Whitechapel Infirmary.	Bruce J. Capell	800	The chapel, which was adapted from a disused ward, is capable of accommodating 150 persons.
assmore Edwards Public Library, Cable Street, Shadwell.	Maurice B. Adams	—	The main feature of this building is the large reading-room, situated in the rear, a spacious apartment 46ft. square and roofed by a steel-constructed dome filled in with fibrous plaster spandrels, and having a lantern over. The reference-room occupies the whole of the frontage on the first floor, with three large oriels. On the ground floor the boys' room, 23ft. 6in. by 19ft 6in., is to the left of the entrance hall, and the borrowers' counter is to the right, on the same side as the librarian's and commissioner's rooms. Filing and staff rooms are in the basement and a caretaker's residence with separate entrance and staircase is provided. The front is in red brick, with lime stucco on the first floor; the entrance porch and cornice and other dressings are of Portland stone.
olice Station, corner of Goodman's Yard and the Minories.	Andrew Murray, City Surveyor	—	The building is of red brickwork, with principal entrance at the corner, which is rounded and surmounted by a turret. On the ground floor are the charge-room, the inspector's room and the muster-room, and opening out of the last is an apartment for the use of detectives. Seven cells are provided cased with glazed brickwork. In the basement are the mess-room and kitchen, with the necessary offices and coat and helmet rooms. The ground floor also contains a reading-room and a large recreation-room. There are three floors of cubicles, sufficient to accommodate sixty-five men.
1898.			
assmore Edwards Free Library, East Ham.	Silvanus Trevail	—	The building is erected of Ruabon red facing bricks, with Bath-stone dressings, and the roofs are covered with Belgian green slates and the clock turret with copper. A residence is provided on the first floor for the librarian.
'est Ham School Board Offices, The Grove, Stratford.	W. Jacques, Architect to the Board	13,964	The frontage of the buildings to the Grove is over 82ft. in length, and the offices, arranged on two floors, extend, in the rear, to a depth of 127ft. On the upper floor the clerk to the Board and his staff occupy the entire front; behind their rooms are committee- and waiting-rooms, and behind these again is the board-room, 40ft. by 35ft, with rooms for chairman and members. On the lower floor, in addition to the entrance hall and vestibules, are the porter's lodge, the architect's office and a room for committee meetings, whilst to the rear are more committee-rooms, &c. Under these is a basement. The building is of red Staffordshire brickwork and Portland stone
'est Ham Technical Institute and Public Library.	Gibson & Russell	60,000	The building comprises a news-room 110ft. by 33ft., a reference library 35ft. square, and a lending library with a public counter 60ft. long, ; also the necessary offices for the staff The news-room is richly decorated, and has two friezes in plaster, modelled and painted by Mr. Fehr. The furnishings in this room are specially designed in oak. The reference library has walnut furniture. The exterior is in red Cranleigh bricks and Portland stone, with symbolical sculpture by Mr. Birnie Rhind. A museum was erected on the eastern side of the institute, costing £7,000, which was largely contributed by Mr. Passmore Edwards
1899.			
oroner's Court, High Street, Poplar.	Lansdell & Harrison	—	The building consists of a coroner's court, shelter block and mortuary block. The coroner's court faces the High Street, and contains a court, coroner's jury retiring-room, witnesses' waiting-room, w.c. and lavatory accommodation, and apartments for the caretaker. The shelter block contains temporary accommodation for two families for use during the disinfection of their homes, where cases of infection have occurred. The mortuary block consists of two mortuaries, the smaller one for infected cases, with accommodation for eight bodies, and the larger for twelve bodies, on the catacomb principle, and a post-mortem room with laboratory. The buildings are grouped round a quadrangle, with entrance for hearses, &c.
npire Theatre of Varieties, The Broadway, Stratford.	W. G. R. Sprague	—	The auditorium has a depth of 70ft. with a clear width of 60ft., and is constructed entirely without columns On the ground floor are fauteuils, stalls, and pit. On the first tier is the grand circle, and on the second tier is the balcony, with the gallery above it, forming practically a three-circle house. The stage is 40ft deep and 70ft. wide, with a height of 55ft A feature of the new building is a number of boxes at the rear of the grand circle. Raised promenades are provided on each level The style of decoration throughout is Moorish.
.and Baths, Glengall Road Poplar, E.	J. & S. F. Clarkson	—	
blic Baths, Balaam Street, Plaistow.	A. Saxon Snell	22,308	The men's first class swimming-bath has a water area of 100ft. by 27ft., and there are sixty-two dressing boxes, and a gallery surrounding it. The second-class bath has a water area of 60ft. by 27ft., and a depth graduating from 3ft. to 6ft.; there are fifty dressing boxes. There are twenty-seven private baths for men and women. The buildings also comprise a caretaker's residence and a towel-laundry. The frontage to Balaam Street is of Leicestershire red bricks, relieved with Portland stone cornices and dressings, the roofs being covered with Westmoreland green slates.
hitechapel Art Gallery, High Street, Whitechapel.	C. Harrison Townsend	—	The gallery provides ample wall-space to hang 450 pictures. The ground-floor hall, which is capable of being let for meetings when not occupied by loan exhibitions, is lighted from aisles which are thrown out on either side, it being impossible to obtain side-light on account of adjoining buildings. The material for the façade towards the High Street is a soft tone terra-cotta. The mosaic which forms the dominant feature of the design was designed by Mr. Walter Crane, and is 25ft. long by 20ft. high. The cost of erection was borne by Mr. Passmore Edwards.
1900.			
thnal Green Infirmary, Cambridge Road, E.	Giles, Gough & Trollope	—	The building will accommodate 750 patients, together with the staff connected with the institution. The site has a length of 740ft., with a frontage to Cambridge Road of 330ft., and of 280ft. to Russia Lane, with an area of about 4½ acres. The Cambridge Road frontage is partly occupied by an entrance block. The administrative block is central, and contains the medical officers', matron's, nurses' and female servants' quarters, and the main kitchen and stores departments. This block contains four storeys, with basement. Separating the front portion of the block from the back is the main corridor, running east and west to the wards, and enlarged at its centre to form a serving hall. The wards are contained in separate blocks, situated three on each side of the administrative block. The ward blocks are each of three storeys, placed axially north and south. The wards contain from twenty-six to thirty-six beds, the large wards being 24ft wide, and warmed by hot-water radiators on the low-pressure system. The buildings are of stock bricks, with best quality facings, relieved by strings of moulded white Suffolk bricks, and the heads and sills of windows are of white Portland stone. Internally glazed bricks have been largely used, and the floors generally are of pitch-pine.
ssmore Edwards Museum, West Ham.	S. B. Russell	10,000	This building adjoins, and is connected with, the Institute, and in character of design is similar to it. The museum contains on the ground floor two galleries and a curator's room, on the first floor three galleries, and there is a large store in the basement. The lighting is mainly from the roof. The floors are of marble mosaic.
est Ham Infirmary, eytonstone.	Sturdy	225,000	The site is that of old Forest House, and comprises about 45 acres. The infirmary when completed will consist of four wards, three storeys high, with accommodation for 672 patients. Each block will be connected by a central corridor. An administrative block of buildings, ward-room and chapel, committee-room, dispensary and rooms for lunatics will be built behind, and provision is also made for the accommodation of seventy nurses.
1901.			
ematorium at Ilford Cemetery.	D. J. Ross	10,500	The plan provides for a chapel 52ft. by 25ft., having one entrance porch and a catafalque. The cremation chamber is at the rear of the chapel. The building has a flat roof, with a stone parapet. The furnace flue is arranged in the centre of the tower and is 80ft high. The crypt is arranged to receive urns. The walls are of Kentish ragstone, and the roof to chapel is covered with Broseley tiles.
rth Eastern Hospital, New Buildings, Hackney Road.	A. & C. Harston	113,642	The new buildings, which form the first section of the permanent hospital, consist of an administrative block, laundry, staff quarters, medical superintendent's and steward's houses, porter's lodge, receiving and discharging rooms, mortuary, four diphtheria and enteric blocks, two isolation blocks and a tank tower.
ssmore Edwards Public Library, corner of Commercial Road and Norway Place, Limehouse.	J. & S. F. Clarkson	—	The frontage of the building is about 55ft., and the depth from north to south 138ft. The basement is used for stores, &c., and a residence for the librarian is put upon the upper part next Commercial Road. The accommodation on the ground floor consists of a lofty news-room for seventy readers, 27ft by 38ft., magazine and reference rooms being placed to the south of the site. The lending library is placed in the centre of the building. The walling is of yellow-stock brickwork, with Portland-stone enrichments.

(To be continued.)

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

Annan (Scotland).—For paving about 7,326 sq. yds, of streetway within the burgh as follows:—(1) Port Street. 3,520 sq. yds., granite or whinstone cubes and setts; (2) Butts Street, 1,430 sq. yds., granite or whinstone cubes; (3) Scotts Street, 2,376 sq. yds., granite or whinstone setts grouted with cement, for the Town Council:—

A. Lang, Gourock, Renfrewshire	£4.622	10	0
J. Jamieson & Sons, Musselburgh	4,489	2	8
D. & D. Neilson, Glasgow	4.479	8	4
J. J. Robson, Newcastle-on-Tyne	4,170	15	3
McLaren & Co, Northumberland	3,974	17	6
J & J. Neilson, Glasgow	3,903	9	10
Tilburn & Co., Dumfries	3,885	0	3
W. Wilson, Glasgow	3,743	10	3
H. & N. Brannigan, Glasgow	3,704	3	11
G. E. Simpson, Newcastle-on-Tyne	3,690	0	0
R. C. Brebner & Co., Edinburgh	3,611	16	1
J. McDermott & Sons, Carlisle	3,455	11	0
W. Dobson, Edinburgh	3,094	9	3
C. McAndrew.* 12, New Road, Ayr	2,931	14	8

* Accepted.

Bedford.—For electric lighting, &c, at Tempsford Hall. Mr. Morgan Williams, M.I.C.E, engineer, 39, Victoria Street, Westminster, S.W.:—

Electric lighting, power plant and wiring.

V. G. Middleton & Co.	£1,795	5	4
Belshaw & Co.	1,705	15	0
A. V. Gifkins & Co.	1,548	0	0
A. V. Gifkins & Co. (alternative)	1,541	0	0
H. M. Leaf*	1,505	0	0

Pumping plant for fire services.

A. V. Gifkins & Co.	594	0	0
R. Warner & Co.	849	0	0
H. M. Leaf*	885	0	0

Pumping plant for domestic services.

A. V. Gifkins & Co	270	0	0
R. Warner & Co.	258	0	0
H. M. Leaf*	221	0	0

* Accepted.

Bentley (Yorks).—For re-building the Bay Horse Inn, Bentley, for Messrs. Whitworth, Son & Nephew, Ltd. Mr John Athron, architect, Carr View, Doncaster:—

J. Flowitt, Doncaster	£3,331	19	0
S. Beastall & Sons, Doncoster	3,172	0	0
W. Johnson & Son, Doncaster	3,090	0	0
F. Beastall, Doncaster	2,972	0	0
D. Gill & Son, Doncaster	2,950	0	0
C. Sprakes & Sons, Doncaster	2,840	0	0
Mullins & Richardson,* Shotten Street, Doncaster	2,829	13	9

* Accepted.

Brackenbrough (Cumberland).—For electric lighting and power plant, for Joseph Harris, Esq, Brackenbrough Calthwaite, near Carlisle. Mr. Morgan Williams, M.I.C.E., engineer, 39, Victoria Street, Westminster, S.W.:—

With 17-b-h.p. engine.

Wallis & Watson	£2,352	0
Holmes & Co.	2,219	0
Holmes & Co. (alternative)	2,191	0
Cox-Walkers	2,146	0
Lowdon Brothers	1,972	10

With 21-b. h p. engine.

E. Scott & Mountain	2,386	15
Wallis & Watson	2,385	0
Holmes & Co.	2,252	0
Holmes & Co (alternative)	2,228	0
Cox-Walkers	2,179	0
Lowden Brothers	2,002	10

Brentford.—For the erection of a free library building in Clifden House grounds, Boston Road, Brentford, for the Brentford Urban District Council. Mr. Nowell Parr, surveyor and architect, Clifden House, Boston Road, Brentford:—

Warings, Ltd., W.	£5,280
G. Godson, Kilburn Lane	5,190
Willis, Hammersmith	5,154
W. Brooking, Richmond, Surrey	5,150
Goddard, Dorking	5,100
Braid, Pater & Co.	4,997
W. Wisdom, Isleworth	4,820
Nightingale, Albert Embankment	4.979
A. & B. Hanson, Southall	4,967
Foster Brothers, Tooting	4,788
Gaze, Kingston	4,787
Renshaw, Putney	4,693
J. Dorey & Co.,* Brentford	4,686
Gough & Co., Hendon	4,684

* Accepted.

Bristol.—For the erection of new warehouse and offices in Castle Green, for Messrs. Habgood Brothers, metal merchants. Mr. Thomas Scammell, architect, 1, St. Stephen Street, Bristol:—

W. Church	£2,219	Perkins & Son	£2,122
J. James	2,200	F. Chown	2,000
Eastabrook & Sons	2,190	G. Hanphries	1,980
Jones & Hill	2,152	Wilkins & Gosling*	1,880

* Accepted. [All of Bristol]

Bromley (Kent).—For laying sewers and surface-water sewers, comprising a length of 3.500ft. of 12in. diameter stoneware pipes, with all manholes, &c., for the Bromley Urban District Council:—

J. F. Fultram	£2,747	0	0
A. C. Soan	2,460	0	0
Pedrette & Co.	1,997	9	6
G. Gwyn	1,985	13	2
E. Iles	1,954	0	0
Foster Brothers	1,888	0	0
Gilman & Rayner	1,796	16	11
G. Bell	£1,737	0	0
Lawrence & Thacker	1,696	10	9
J. A. Ewart	1,607	17	5
H. Woodham & Sons	1,587	9	6
Ambrose & Co.	1,499	16	6
A. Dickson	1,470	19	4
Tryhorn & Son	1,419	0	0
Wilson, Border & Co.	1,382	19	5
F. Roberts & Co.	1,313	15	11
Ball, Davies & Co.,* 32, Middleton Square, E.C.	1,191	8	2

* Accepted.

Budleigh Salterton.—For the erection of a detached house in Station Road, for Mr. Basil E. Greenfield. Mr. Ernest E. Ellis, architect, Exmouth and Salterton. Quantities by the architect:—

W. H. Perry, Exmouth	£1,131	0
G. Bennett, Salterton	1,118	17
N. Pratt, Clyst St. Mary	1,113	0
H. Dart, Exmouth	1,034	0
H. Gould, Topsham	945	0

Exmouth.—For the erection of two houses, Cranford Avenue, for Mr. H. Avery. Mr. Ernest E. Ellis, architect, Exmouth and Salterton. Quantities by the architect:—

J. Tremlett, Topsham	£3,461	2	6
Westcott, Austin & White, Exeter	3,117	0	0
H. Gould, Topsham	3,053	15	0
T. Abell, Exmouth	3,040	0	0
N. Pratt, Clyst St. Mary	2,912	0	0
W. H. Perry, Exmouth	2,623	0	0
R. B. Ponsford, Exmouth	2,619	0	0
W. H. Chown, Lumpstone	2,611	0	0
H. Dart,* Exmouth	2,293	10	0

* Accepted. [Architect's estimate, £2,500.]

Exmouth.—Accepted for the erection of a detached house, Gussiford Road, for Mr. J. J. Bastin. Mr. Ernest E. Ellis, architect, Exmouth and Salterton:—

W. H. Perry	£707	10

Freshwater (Isle of Wight).—For Freshwater and part of Totland main sewerage works. Messrs. W. B G. Bennett, Son & Berry, engineers, Midland Bank Chambers, Southampton:—

Contract No. 1.—Cast-iron pipes and special castings.

H. Green & Co., London	£6,117
Middlesex Foundry Co., Isleworth	5,991
Biggs, Wall & Co., London	5,668
Playfair & Toole, Southampton	4,643
Cochrane & Co., Dudley	4,620
Laidlaw & Son, London	4,596
Stanton Iron Co., Nottingham	4,463
T. & S Roberts, Ltd., West Bromwich	4,368
Maclaren & Co., Glasgow	4,337
Macfarlane, Strang & Co., Glasgow	4,252
C. Jordan & Co., Newport, Mon.	4,045
D. M. Stevenson & Co.,* Glasgow	4,023

[Engineer's estimate, £4,000.]

Contract No. 2.—Construction of 10 miles of cast-iron and stoneware pipe sewers, ejectors, chambers, manholes, &c.

Braithwaite & Co., Leeds	£23,529
Pedrette & Co, London	21,457
H. & J Binns, Croydon	19,860
Saunders & Co., Bournemouth	18,504
Cooke & Co, London	18,287
G. Bell, London	17,549
J. A. Ewart, London	17,459
W. & H. Simmons, Brading	17,200
Playfair & Toole, Southampton	16,562
Plascott & Son, Southampton	16 560
Streeters & Todhunter,* Godalming	16,264

[Engineer's estimate, £17.000]

Contract No. 3.—Construction of cast-iron sea outfall.

Pedrette & Co.	£3.333
Bartlett, Weymouth	3,195
Cooke & Co.	2,500
Vallance. Weymouth	2,386
Swales, Bournemouth	2,340
Playfair & Toole	2,300
H. Plascott & Son	1,900
Agius & Co.,* Southampton	1,686

[Engineer's estimate, £2,000.]

Contracts Nos. 2 and 3.—Cast-iron pipe and stoneware pipe sewers, ejectors, chambers, manholes, &c., with sea outfall.

Trimm, Eastleigh	£28,988
Dean, Margate	24,594
Binns, Croydon	23.911
Wood, Bristol	22,168
Cooke & Co.	20.363

* Accepted subject to usual enquiries.

Hull.—For the necessary work in connection with the superstructure of buildings proposed to be erected on the west side of Victoria Square, for the Property Committee. Mr. Joseph H. Hirst, city architect, Town Hall, Hull:—

Arnold & Son, Doncaster	19,981	0
G. Houlton	19,320	0
Bowman & Sons, Stamford and Hull	18,795	0
J Peers	18,348	0
T. Goates	18,095	0
J. T. Levett	18 082	0
Quibell, Son & Greenwood	18,050	0
Hebblewhite & Wilson, Spring Bank	17,994	10
G. H. Panton,* Anlaby Road	17.920	0

* Accepted. [Rest of Hull.]

Ipswich.—For the work covered by the following specification:—(No. 13) steam, exhaust, feed. drain, condensing water, &c., pipes, feed, well and sumpt pumps, surface-condensing plant and pipes, feed-water filters, tanks. &c., for the Corporation:—

E Danks & Co., Ltd, Oldbury	£9,150	0	0
D. Stewart & Co., Ltd., Glasgow	8.471	0	0
Mather & Platt, Ltd., Manchester	8 450	0	0
Bertrams, Ltd., Edinburgh	7 693	0	10
Cole, Marchant & Morley, Ltd., Bradford	7.455	0	0
Babcock & Wilcox, Ltd, London	7,210	0	0
A. Koppel, London	7,111	10	0
Crompton & Co., Ltd., London	7,011	0	0
J. Spencer, Ltd., Wednesbury	7,0 8	0	0
I. Storey & Sons, Ltd., Manchester	6,831	0	0
Thornton & Crebbin, Bradford	£6,786	0	0
Sir Hiram Maxim Electrical and Engineering Co., Ltd.,* London	6,647	0	0
Aiton & Co., London	6,351	0	0
Alley & MacLellan, Glasgow (feed pumps and condensers only)	1,905	0	0

* Accepted.

Leavesden (Herts).—For the erection of sanitary annexes at the Leavesden Asylum, for the Metropolitan Asylums Board:—

C. Miskin & Sons, St. Albans	£2,780	0	0
J. & J. Goss, Watford	2,753	15	6
A. H. Inns, Watford	2,750	0	0
Clark Brothers, Watford	2,584	6	0
H. Martin, Northampton	2,442	0	0
R. L. Tonge,* Jubilee Road. Watford	2,398	0	0

[Engineer's revised estimate, £2,450.]

* Accepted.

Leicester.—For the erection of stabling and six cottages, Nedham Street. Mr. J Wigg, architect, 5, St. Martin's East, Leicester:—

Bland & Co.	£2.894	0
J. H. Clayton	2,880	0
Hardington & Elliott	2,830	0
J. Hutchinson & Sons	2,805	0
F. Beck & Co.	2,800	0
J. O. Jewsbury	2,703	0
Cole,* Bridge Road	2,685	10

* Accepted.

London.—For pulling down and re-erecting 368 and 370, Oxford Street, and a portion of Gees Court, for Mr. Charles Morrell. Mr J. C. Radford, architect, 163, Upper Richmond Road, S.W. Quantities by Messrs. Rood & Robinson:—

W. R. Williams	£6,287	Carmichael	5,685
Parsons & Co.	6,040	Smith & Sons	5,620
Parkinson & Son	5,995	Lorden & Son	5,544
Stimpson & Co.	5,940	Patman & Fotheringham	5,543
H. Roffey	5,938	F. G. Minter*	5,[illegible]40
Martin, Wells & Co.	5,800		
Holliday & Greenwood	5.732		

* Accepted.

Pulham Market (Norfolk).—For alterations and additions to the workhouse at Pulham Market, for the Guardians of Depwade Union. Mr. Alfred Clarke, architect, 126, London Road, Lowestoft:—

F. R. Hipperson, Norwich	£1,291	10
R. Morris, Ditchingham, Norfolk	1,288	10
A. Cook, Long Stratton, Norfolk	1,276	4
H. Hipperson, Harleston, Norfolk	1,276	0
Boddy & Son, 32, Orchard Street, Norwich	1,238	0
J. Gaze,* Carlton Colville, Suffolk	1,232	18

* Accepted.

Torquay.—For the erection of an annexe, for the Directors of the Victoria and Albert Hotel Co, Torquay. Messrs. E. Appleton & Son, F.R.I.B.A., &c., architects, 10, Abbey Road, Torquay. Quantities by Mr. C. Sewell Appleton:—

J. Smerdon	£2,736	0	0
T. Vanstone	2,542	12	0
E. P. Bovey & Sons	2,525	0	0
R. F. Yeo & Sons*	2,493	0	0
S. Blatchford	2,483	0	0
J. C. & W. Watson	2 470	0	0
M. Bridgman, Paignton	2,134	14	5

* Accepted. [Rest of Torquay.]

Watford.—For the Coronation enlargement to Watford District Hospital. Mr. Charles P. Ayres, architect and surveyor:—

Foster Brothers	£2,983	Andrews & Sons	£2,648
J. Darvill	2,770	Clarke Brothers	2,640
S Swain	2,760	Dupont & Co.	2,626
W. King	2,750	Clifford & Gough	2,619
Saw Brothers	2,685	C. Brightman	2,590
H. B. Watkins	2,680	G. & J. Waterman	2.493
Webster & Cannon, Aylesbury	2,630	H. Brown*	2,[illegible]50

* Accepted. [Rest of Watford.]

Winslow (Bucks).—For sewage, &c, works, for the Rural District Council. Mr. H. A. Johnson, M.I.C.E., engineer, Bradford:—

Johnson Brothers, Hereford	£6 548	0	0
Johnston & Langley, Leicester	5.2[illegible]4	10	3
J. Moffatt, Manchester	5,[illegible]60	8	1
Meredith, Gloucester	5.0[illegible]0	0	0
E. Iles, Wimbledon	4,801	0	0
H. H. Barry. Nottingham	4,747	0	0
H. Manders, Leyton, Essex	4,70[illegible]	15	0
H Williams, Harpenden	4,584	8	2
W. Briggs Bradford	4.477	2	0
Braithwaite & Co, Newby, Leeds	4,410	0	0
S. Wood, Bristol	4.4[illegible]3	9	2
Green & Co., Aylesbury	4,297	0	0
G. E. Raynor, Croydon	4.238	2	0
A Dickson & Co., Bradford	4,160	0	0
Grounds & Newton, London	4.157	13	0
T. Yirrell, Linslade	4,085	0	0
W. Morley & Sons, Cannock	4 069	16	6
Davies, Ball & Co., London	4,036	0	6
Matthews Brothers,* Winslow	3,[illegible]61	13	0

* Accepted.

Warwick.—For additional nurses' accommodation, extensions to wards, and erection of a porter's lodge, for the Warwick Joint Hospital Board. Mr F. P. Trepass, architect, Warwick. Quantities by architect:—

T. Bailey. Leamington	£3,968
Moss & Sons, Loughborough	3,876
G. J. Smith & Sons, Leamington	3,864
R. Bowen, Leamington	3,845
Fincher & Co., Stratford-on-Avon	3,810
F. W. Watson, Southam	3,[illegible]65
Kelley & Son, Coventry	3 537
G Preston, Clarendon	3,509
E. Talliss,* Warwick	3,475
G. Marshall, Smethwick	3,405
W. Hopkins, Birmingham	3,399

* Accepted.

Complete List of Contracts Open.

DATE OF DELIVERY		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
		BUILDING:		
June	4	Nether Green—Rebuilding Inn	——	Gibbs & Flockton, 15 St. James's Row, Sheffield.
„	4	Merthyr—Extension of Hospital	——	C. M. Davies, 112 High Street, Merthyr Tydfil.
„	4	Grimsby—Lavatory	Corporation	H. G. Whyatt, Borough Engineer, Town Hall Square, Grimsby.
„	4	Little Broughton, Cumberland—Two Houses	Main Roads and Bridges Committee.	J. Goodfellow, 3 Church Street, Whitehaven.
„	4	Merthyr—Schoolroom	——	T. Roderick, 50 Glebeland Street, Merthyr.
„	4	Newport, Mon.—Hall	——	Lansdowne & Griggs, Architects, Metropolitan Bank Chambers, Newport.
„	4	Morley, Yorks—Alterations, &c., to Shop	——	W. H Smith, Church Street, Morley, Yorks.
„	4	Milnsbridge, Yorks—Residence	——	A. Shaw, Architect, Golcar.
„	4	Greenock—Cement, Lime	Corporation	Master of Work's Office, Municipal Buildings, Greenock.
„	5	Carlisle—Rebuilding Sea Wall	Rural District Council	J. W. Kissopp, 18 Hart Street, Carlisle.
„	5	Clewer, near Windsor—Wall, &c.	Windsor R.D.C.	J. E Gale, 3 Sheet Street, Windsor.
„	5	Cork—Hospital	Guardians	J. Cotter, Clerk, Board Room, Offices, Workhouse, Cork.
„	5	Clonakilty—Annexe, &c., to Infirmary	Guardians	W. H. Spiller, Clerk of Union, Clonakilty.
„	5	Bristol—Lodge	City and County Asylums Committee.	City Valuer, Council House, Bristol.
„	6	Burnley—Laundry, &c.	Guardians	Messrs. Keighley, Architects, Nicholas Street, Burnley.
„	6	Gorran, Cornwall—Bullocks' House &c	——	F. C. Jury, Architect, St. Austell.
„	6	Newton Abbot, Devon—Ten Cottages	H. Snow	Mr. Seagar, 24-26 Union Street, Newton Abbot.
„	6	Torpoint, near Devonport—Farmhouse	Major-General Sir R. Pole Carew	W. J. Carder, 8 Athenæum Terrace, Plymouth.
„	6	Aberdare—Alterations, &c., to Police Station	Glamorgan County Council	T. M. Franklen, Clerk, County Offices, Westgate Street, Cardiff.
„	8	Sheffield—Board Room and Offices	Guardians	Ellis Brothers, Architects, Orchard Street, Sheffield.
„	8	Eyemouth, Berwickshire—Latrines	——	J. Donaldson Parish Council Office, Eyemouth.
„	8	Musselburgh, Scotland—Post Office	Commnrs. of H.M. Works	H.M. Office of Works, 3 Parliament Square, Edinburgh.
„	8	York—Cement, &c.	North-Eastern Rly. Co.	E. H. Clark, Stores, Gateshead.
„	8	Hay, Breconshire—Market Hall	Urban District Council	R. W. Thomas, Architect, Llandrindod Wells.
„	8	Carlisle—Alterations, &c.	Rural District Council	J. Graham, Architect, Bank Chambers, Bank Street, Carlisle.
„	8	Abercynon—Workmen's Hall	——	S. Gibson, Architect, Commercial Street, Mountain Ash.
„	8	Ystradyfodwg—Additions to Masters' House, &c.	School Board	J. Rees, Hillside Cottage, Pentre.
„	8	Ystradyfodwg—Additions to School	School Board	J. Rees, Hillside Cottage, Pentre.
„	8	Hornsey—Workmen's Dwellings	Urban District Council	E. J. Lovegrove, 99 Southwood Lane, Highgate, N.
„	8	Dublin—Five Cottages	Gt. Northern Rly. Co. (Ireland)	Company's Engineer-in-Chief, Dublin.
„	8	Blaenau-Gwent Abertillery, Mon.—School	Aberystruth School Board	R. L. Roberts, Board's Architect, Abercarn, Mon.
„	9	Vergemount, Clonskeagh—Boundary Wall	Joint Hospital Board	F. P. Fawcett, Clerk, Town Hall, Rathmines, co. Dublin.
„	9	West Kensington—Workshops	Commnrs. of H.M. Works, &c.	J. Wager, H.M. Office of Works, Storey's Gate, London, S.W.
„	9	Stockwell—Sorting Office	Commnrs. of H.M. Works, &c.	J. Wager, H.M. Office of Works, Storey's Gate, London, S.W.
„	9	Burslem, Stoke-on-Trent—Post Office	Commnrs. of H.M. Works, &c.	Secretary, H.M. Office of Works, Storey's Gate, London, S.W.
„	9	Mortlake—Twenty-six Workmen's Dwellings	Barnes Urban District Council	G. B. Tomes, Surveyor, Council Offices, High St., Mortlake, S.W.
„	9	Holbeach, Lincs—Addition to Infirmary	——	F. B. Ward, 7 York Row, Wisbech.
„	9	Leeds—Engine-Room, &c.	Gas Committee	R. H. Townsley, General Manager, Gas Offices, Municipal Buildings, Leeds.
„	9	Littleborough, Lancs—Wall	Main Roads and Bridges Committee.	W. H. Schofield, County Surveyor, County Offices, Preston.
„	9	London, N.—Brick Paving	Islington Borough Council	J. P Barber, Town Hall, Upper Street, Islington, N.
„	9	London, W.—Workshops	Commnrs. of H.M. Works, &c.	J. Wager, H.M. Office of Work's Storey's Gate, London, S.W.
„	9	Purston, near Pontefract—Church	——	Garside & Pennington, Architects, Pontefract.
„	10	Altrincham, Cheshire—Additions, &c., to Police Station	——	H. Beswick, County Architect, Newgate Street, Chester.
„	10	Derrygonnelly, Ireland—House	——	D. Elliott Derrygonnelly.
„	10	Preston—Cottage	——	F. E. Dixon, 49 Lune Street, Preston.
„	10	London—Repairs to Buildings	Commnrs. of H.M. Works, &c.	Secretary, H.M. Office of Works, Storey's Gate, London, S.W.
„	10	St. Marylebone—Tenement Dwellings	St. Marylebone Borough Council	H B. Measures, 16 Great George Street, Westminster.
„	11	Brighton—Portland Cement	Town Council	F. J. C. May, Surveyor, Town Hall, Brighton.
„	11	East Ardsley—Store and Houses	Morley Industrial Co-operative Society, Ltd.	R. Castle & Son, London, City and Midland Bank Chambers, Cleckheaton.
„	11	Downpatrick—Twelve Labourers' Cottages	Rural District Council	E. Nolan, Council's Engineer, Union Workhouse, Downpatrick.
„	11	Cwmpark, Glam.—Chapel	——	Jacob Rees, Architect, Pentre.
„	12	Barnes—Four Shops	——	F. & W. Stocker, 90-91 Queen Street, Cheapside, E.C.
„	12	Camborne, Cornwall—Two Houses	——	W. Raven, Praze, Crowan.
„	12	Maidenhead—Extensions to Central Station	Town Council	P. Johns, Borough Surveyor, Guildhall, Maidenhead.
„	12	Thirsk, Yorks—School, &c.	——	T. Stokes, Architect, Thirsk, Yorks.
„	12	Aber, Bargoed—250 Houses	Powell Duffryn Steam Coal Co., Ltd.	G. Kenshole, Architect, Handbury Road, Bargoed.
„	12	Loundwell, near Bristol—Church	Church Building Committee	H. M. Bennett, 33 Corn Street, Bristol.
„	13	Edinburgh—Additions to Hospital	Parish Council	A. Ferrier, Clerk, Parish Council Chambers, Castle Terrace, Edinburgh.
„	15	Hebden-Bridge—Chapel and School	——	W. H. Cockcroft, Architect, West End, Hebden-Bridge.
„	16	Brixham, Devon—Rebuilding Inn	J. W. Chapman	F. W. Vanstone, Architect, Palace Chambers, Paignton.
„	16	Stowmarket, Suffolk—Alterations, &c., to House	Guardians	J S. Corder, Architect, Wimborne House, Tower Street, Ipswich.
„	20	Houghton-le-Spring, Durham—House	——	Mr. Pallister, Cross House, Philadelphia, Fence.
„	23	Clapham, S.W.—Portion of Car Sheds	——	Architect's Department (Highways Section), 19 Charing Cross Road, W.C.
„	24	Whitchurch, near Cardiff—Superstructure of Asylum	Cardiff Corporation	Oatley & Skinner, Architects, Edinburgh Chambers, Baldwin Street, Bristol.
„	24	London, S.W.—Widening, &c., of Station	L. B. & S. C. Railway Co	Engineer of the Company, London Bridge Station, S.E.
„	30	Pembroke Dock—Schoolroom, &c.	——	G. Morgan & Sons, 24 King Street, Carmarthen.
		ENGINEERING		
June	4	Matlock Bridge—Widening Bridge	Derbyshire County Council	J. S. Story, County Surveyor, County Offices, Derby.
„	4	Greenock—Washer, Scrubber, &c.	Gas Committee	W. Ewing, Engineer, Inchgreen Gasworks, Greenock.
„	4	Grimsby—Hydrants	Corporation	H. G. Whyatt, Borough Engineer, Town Hall Square, Grimsby.
„	5	Bridgend, Wales—Waterworks	Penybont R.D.C.	J. & F. J. Hurley, 10 Bridgend Road, Aberkenfig.
„	6	Leeds—Lamps, &c.	Corporation	Superintendent of Street Lighting, Municipal Buildings, Leeds.
„	6	Swansea—Electric Lighting	——	W. Jones, Secretary, Grammar School, Swansea.
„	6	Haslingden, Lancs—Pumping Station	Town Council	J. S. Green, Borough Engineer, Municipal Offices, Haslingden.
„	8	Brighton—Electrical Plant	Town Council	A. Wright, Star Chambers, 30 Moorgate Street, E C.
„	8	York—Electric Wires, Cables, &c.	N.E. Railway Co.	E. H. Clark, Stores, Gateshead.
„	8	York—Telegraph Stores	N.E. Railway Co.	C. H. Ellison, Telegraph Department, York.
„	8	Axbridge—Waterworks	Rural District Council	A. Powell, 3 Unity Street, College Green, Bristol.
„	8	Whittington, near Manchester—Bacterial Filter Beds	Urban District Council	A. H. Mountain, Engineer, Town Hall, Withington.
„	9	Littleborough, Lancs—Electric Lighting	Urban District Council	W. C. C. Hawtayne, 9 Queen Street Place, London, E.C.
„	10	London, S.W.—Motor Vans	Chelsea Borough Council	T. W. E. Higgins, Borough Surveyor, Town Hall, Chelsea.
„	11	Bradford—Electric Lighting	Guardians	F. Holland, 11 Parkinson's Chambers, Bradford.
„	12	Berwyn, near Llangollen—Bridges and Roadways	——	E. Foulkes-Jones, Secretary, King's Bridge Committee, Llangollen.
„	13	Bradford—Electric Lighting	Corporation	Town Clerk, Town Hall, Bradford.
„	13	Bradford—Kitchen Furnishing	Corporation	Town Clerk, Town Hall, Bradford.
„	13	Downpatrick, Ireland—Sinking Wells	Rural District Council	R. L. Morrow, Executive Sanitary Offices, Downpatrick.
„	13	Trim, Ireland—Bridge	Meath County Council	H. J. Cullen, Secretary, County Offices, Navan.
„	15	Ghiza—Electric Power Supply	——	Commercial Intelligence Branch, B. of T., 50 Parliament St., S.W.
„	15	Wimbledon—Sludge-Pressing Machinery	Urban District Council	C. H. Cooper, Engineer, Council Offices, Broadway, Wimbledon.
„	16	Richmond, Ireland—Waterworks	District Asylum Committee	J. H. H. Swiney, Engineer, Avenue Chambers, Belfast.
„	16	Gloucester—Light Railways	Tramways Committee	A. Dickinson & Co., Telephone Buildings, Birmingham.
„	17	Vossern—Weert St. George—Railway	——	M. Darteville, Rue de Turquie, No. 18, Saint Gilles, Bruxelles.
„	23	Bridgwater—Pipelaying, &c.	Rural District Council	T. M. Reed, Clerk, Bridgwater.
„	23	Bridgwater—Sluice Valves	Rural District Council	T. M. Reed, Clerk, Bridgwater.
July	1	Rangoon—Electric Supply Undertaking	Municipal Committee	Ogilvy, Gillanders & Co., 67 Cornhill, E.C.
„	4	Bristol—Gangways	Electrical Committee	H. F. Proctor, City Electrical Engineer, Feeder Road, St. Phillips.
Oct.	30	Marina, Upper Barracca, Malta—Lift	Crown Agents for the Colonies	Receiver-General and Director of Contracts, Valletta, Malta.
		FURNITURE:		
June	11	Stratford-on-Avon—Furniture	Guardians	S. C. Warden, Clerk, Union Offices, Stratford-on-Avon.
„	13	Fulbourn, near Cambridge—Bedsteads, &c.	——	Steward, Cambridgeshire Asylum, Fulbourn.

Complete List of Contracts Open *—continued.*

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
		IRON AND STEEL:		
June	4	Cardiff—Pipes	Corporation	C. H. Priestley Waterworks Engineer, Town Hall, Cardiff.
,,	4	London. E.C.—Wagon Material	N. E. Railway Co.	Secretary, 237 Gresham House, Old Broad Street, London, E.C.
,,	4	Ashford, Middlesex—Ironmongery, &c.	——	F. G. Beaching, Clerk to the Managers, Ashford.
,,	5	Bridgend. Wales—Cast-Iron Pipes	Penyhont Rural District Council	J. & F. J. Hurley, 10 Bridgend Road, Aberkenfig.
,,	8	Amsterdam—Water-Pipes, &c.	Municipality of Rotterdam	Widow P. van Waesbarge & Son, Booksellers, Rotterdam.
,,	8	London, S.W.—Engineer's Tools, &c.	Metropolitan Asylums Board	T. D. Mann. Clerk, Board's Offices, Embankment, E.C.
,,	8	Copenhagen—Rails and Fastenings	Danish State Railways	Engineer-in-Chief, 11 Colbjörnsensgade, Copenhagen, B.
,,	8	London, E.C.—Materials	Madras Railway Co.	J. Byrne, 61 New Broad Street, Lofidon, E.C.
,,	8	York—Materials	N.E. Railway Co.	E. H. Clark, Stores. Gateshead.
,,	9	Manchester—Ironmongery. &c.	Thompson M'Kay & Co., Ltd	Mr. Warburton, 2 Ducie Street, London Road, Manchester.
,,	10	Northfleet Kent—Garden Seats	Urban District Council	District Surveyor, Council Offices, The Hall, Northfleet.
,,	15	Bangkok. Siam—Permanent-way Materials	Royal Siamese State Railways	Director-General, Gehots, Bangkok.
,,	15	Bangkok. Siam—Railway Stores	Royal Siamese State Railways	Siamese Legation, London.
,,	15	Johannesburg—Rails, &c.	Municipality	Mordey & Dawbarn, 82 Victoria Street. London, S.W.
,,	16	London, W.—Ironmongery, &c.	Guardians	H. F. Aveling, 313-319 Harrow Road, W.
		PAINTING AND PLUMBING:		
June	6	Preston—Painting	Lancashire County Council	W. C. Hall, County Bridge Master, County Offices, Preston.
,,	6	Higher Summerlands, Exeter—Painting, &c,	Guardians	R M. Challice, 14 Bedford Circus. Exeter.
,,	6	Lancaster—Painting Bridges	Caunty Council	W. C. Hall, County Bridgemaster, County Offices, Preston.
,,	8	London, E.C.—Paints, Varnishes. &c.	Madras Railway Co.	J. Byrne, 61 New Broad Street, London, E.C.
,,	8	Winwick. near Warrington—Painting &c.	County Asylum Committee	H Ellis, Clerk, County Asylum, Winwich, Warrington.
,,	8	York—Oils, Brushes, &c.	N.E. Railway Co.	E. H. Clark, Stores, Gateshead.
,,	9	Manchester Oils, Brushes, &c.	Thompson, M'Kay & Co., Ltd.	Mr. Warburton, 2 Ducie Street, London Road, Manchester.
,,	10	Brotherton, Yorks—Cleaning and Painting	N.E. Railway Co.	Cleveland Bridge and Engineering Co., Ltd , Brotherton, Yorks.
,,	23	London, S.W.—Re-painting. &c.	London County Council	Engineer's Department, County Hall, Spring Gardens, S.W.
		ROADS AND CARTAGE:		
June	4	Greenock—Pavement, setts, &c.	Corporation	Master of Works. Municipal Buildings, Greenock.
,,	4	Lyminage, Kent—Kentish Rock	Guardians	R. Lonergan, 11 Cheriton Place Folkestone.
,,	4	Southend-on-Sea—Making-up Streets	——	E. J. Alford, Borough Surveyor, Southend-on-Sea.
,,	6	Bollington, near Macclesfield - Macadam	Urban District Council	S. Knight, Clerk, Council Offices. Bollington.
,,	6	Sandal Magna Yorks—Road Works	Urban District Council	F. Massie, Tetly House, Wakefield.
,,	6	Willington, Durham—Footpaths	Urban District Council	J. H. Gardner. Surveyor, Willington near Durham.
,,	6	Clayton-le-Moors. Lancs—Road Works, &c.	Urban District Council	A. Dodgeon, Council's Surveyor, Clayton-le-Moors.
,,	6	Raunds, Northants—Materials	Urban District Council	T. Yoke Engineer. Raunds.
,,	8	London. S.E.—Paving and Making-up Street	Camberwell Borough Council	W. Oxtoby, Borough Engineer, Town Hall, Camberwell.
,,	8	Beckenham—Making-up Roads	Urban District Council	J. A. Angell, Surveyor, Council Offices Beckenham.
,,	8	Stafford—Roads	Corporation	W. Blackshaw, Borough Engineer Borough Hall, Stafford.
,,	8	Halifax—Flagging Playground, &c.	School Board	W. H. Ostler Clerk School Board Offices, Halifax.
,,	8	York—Flags, Stone, Whinstone, &c.	North Eastern Railway Co.	E. H. Clark. Stores, Gateshead.
,,	8	Ely—Materials	Urban District Council	G. M. Hall, Clerk, Market Square. Ely.
,,	8	Stockton-on-Tees—Street Improvement Works	Corporation	M. H. Sykes, Borough Engineer, Town Hall, Stockton-on-Tees.
,,	8	Warrington- Forming, &c , Streets and Passages	Paving and Sewage Committee	T. Longdin, Borough Engineer, Town Hall, Warrington.
,,	9	Dover—Wood Paving	Town Council	H E. Stilgoe, Borough Engineer, Town Hall, Dover.
,,	9	London, E.C.—Stone Paving	Streets Committee	Engineer, Public Health Department. Guildhall, London, E.C.
,,	9	Tottenham—Making-up Roads	Urban District Council	W. H. Prescott, 712 High Road, Tottenham.
,,	9	Tottenham—Tar and Asphalt Paving	Urban District Council	W. H. Prescott, 712 High Road, Tottenham.
,,	10	London, S.W.—Paving	Metropolitan Asylums Board	A. O. C, Harston, 15 Leadenhall Street E.C.
,,	10	Maidstone—Kerbing	Kent County Council	F. W. Ruck, 86 Week Street, Maidstone.
,,	11	Cheshunt Making-up Road	Urban District Council	R. H. Jeffes, Engineer Cheshunt.
,,	11	Houghton-le-Spring—Materials	Rural District Council	D. Balfour, Council's Surveyor, Houghton-le-Spring.
,,	12	Berwyn, near Llangollen—Roadways	——	E. Foulkes-Jones, Secretary, King's Bridge Committee, Llangollen.
		SANITARY:		
June	4	Greenock—Lime and Pipes	Corporation	Master of Works, Municipal Buildings Greenock.
,,	4	Blaydon-on-Tyne—Scavenging, &c.	Urban District Council	R. Biggins, Sanitary Inspector. Council Offices, Blaydon-on-Tyne.
,,	8	York—Lime, Drain-pipes, &c.	North Eastern Railway Co.	E. H. Clark, Stores, Gateshead.
,,	8	Tewkesbury—Sewerage Works	Corporation	W. Ridler Borough Surveyor, Tewkesbury.
,,	8	Great Harwood, Lancs—Sewage-disposal Works	Joint Sewerage Board	Brierley & Holt, 20 Richmond Terrace. Blackburn
,,	8	Tunbridge Wells - Sewerage, &c., Works	Rural District Council	F. Harris, Broadway, Southborough Tunbridge Wells.
,,	9	Manchester—Stores, &c.	Thompson, M'Kay & Co., Ltd.	Mr. Warburton, 2 Ducie Street, London Road, Manchester.
,,	10	Rugeley—Field Pipes, &c.	Urban District Council	C. Tees, Chairman of Sanitary Committee, Rugeley
,,	10	Auchterarder, Scotland—Drainage, &c., Works	Town Council	J. P. Kennaway, Town Clerk. Auchterarder, Scotland.
,,	10	Dunham Massey, Cheshire—Sewerage Works	Bucklow R.D.C.	J. M. D. M'Kenzie, 7 Market Street, Altrincham.
,,	10	Seghill, Northumberland—Scavenging	Urban District Council	T. Spencer. Clerk, Seghill.
,,	10	Chelmsford—Sewers	Town Council	G. A. Lasse, 16 London Road, Chelmsford.
,,	22	Belper—Sewers, &c.	Urban District Council	C. J. Lomax, 37 Cross Street, Manchester.
		TIMBER:		
June	8	South Hetton—Colliery Timber	Coal Company, Ltd.	J. R. Lambert, South Hetton, Sunderland.

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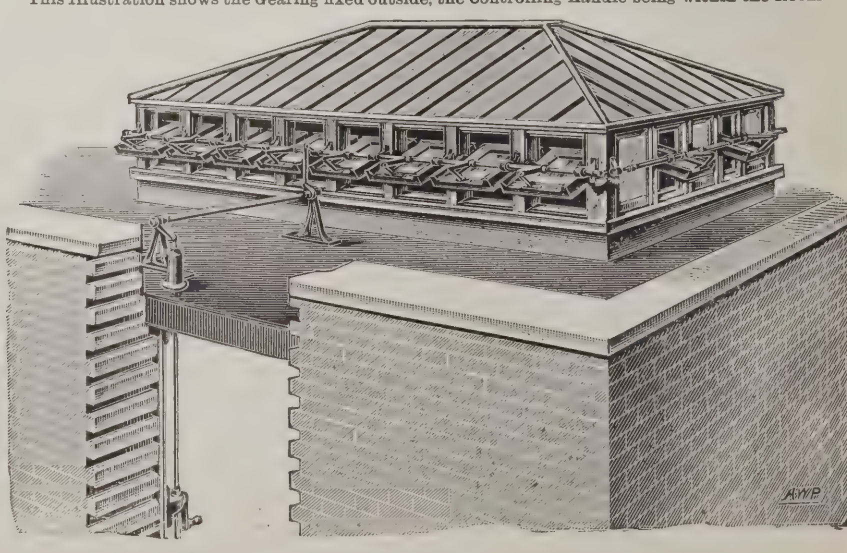

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June 9	Croydon—Children's Home	£15 15s., £10 10s.	—	H. List, Clerk, Union Offices, Mayday Road, Thornton Heath.
" 9	Croydon—Two Relief Stations	£10 10s.	—	H. List, Clerk, Union Offices, Mayday Road, Thornton Heath.
" 13	Hamilton, Scotland—Cemetery	—	10s. 6d.	A. L. Smith 25 Duke Street, Hamilton.
" 18	Limerick—Library and Museum	£75, £25.	—	W. M. Nolan, Town Clerk, Town Hall, Limerick.
" 19	Bridlington—Water-Supply Scheme	—	—	Mr. Woodhose, Chairman of Parish Council, Flamborough.
" 23	Poplar, E.—Public Library	£75.	—	Borough Surveyor, Council Offices, High Street, Poplar, E.
July 20	Taunton—Library	£30, £20, £10.	10s. 6d.	G. H. Kite, Town Clerk, Municipal Buildings, Taunton.
No date	Glasgow—Branch Library	—	—	J. D. Marwick, Town Clerk, City Chambers, Glasgow,

Current Market Prices.

FORAGE.

		£	s.	d.	£	s.	d.
Beans	per qr.	1	9	9	1	12	3
Clover, best	per load	4	7	6	4	15	0
Hay, best	do.	3	15	0	5	10	0
Sainfoin mixture	do.	3	15	0	4	5	0
Straw	do.	1	8	0	1	18	0

OILS AND PAINTS.

		£	s.	d.	£	s.	d.
Castor Oil, French	per cwt.	1	1	0	1	2	2
Colza Oil, English	do.	1	4	3		—	
Copperas	per ton	2	2	6		—	
Lard Oil	per cwt.	2	15	0	2	17	0
Lead white, ground, carbonate	do.	1	4	10		—	
Do. red	do.	1	0	$4\frac{1}{2}$			
Linseed Oil, barrels	do.	1	3	9		—	
Petroleum, American	per gal.	0	0	$5\frac{5}{8}$	0	0	$5\frac{3}{4}$
Do. Russian	do.	0	0	$4\frac{1}{8}$	0	0	$4\frac{1}{4}$
Pitch	per barrel	0	8	0		—	
Shellac, orange	per cwt.	6	4	0	6	5	0
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Home Melt	per cwt.	1	9	0			
Tar, Stockholm	per barrel	1	1	6		—	
Turpentine	per cwt.	2	2	$7\frac{1}{2}$		—	

METALS.

		£	s.	d.	£	s.	d.
Copper, sheet, strong	per ton	75	0	0		—	
Iron, Staffs., bar	do.	6	5	0	8	10	0
Do. Galvanised Corrugated sheet	do.	11	7	6	11	10	0
Lead, pig, Soft Foreign	do.	11	11	3	11	12	6
Do. do. English common brands	do.	11	17	6	12	0	0
Do. sheet, English 3lb. per sq. ft and upwards	do.	14	10	0		—	
Do. pipe	do.	15	0	0		—	
Nails, cut clasp, 3in to 6in.	do.	9	5	0		—	
Do. floor brads	do.	9	0	0		—	
Steel, Staffs., Girders and Angles	do.	5	15	0	6	7	6
Do. do. Mild bars	do.	6	12	6	7	2	6
Tin, Foreign	do.	133	15	0	134	5	0
Do. English ingots	do.	135	0	0	135	10	0
Zinc, sheets, Silesian	do	26	0	0		—	
Do. do. Vieille Montaigne	do.	26	5	0		—	
Do. Spelter	do.	20	17	6	21	0	0

TIMBER.

SOFT WOODS.

			£	s.	d.	£	s.	d.
Fir, Dantzic and Memel		per load	1	13	0	3	0	0
Pine, Quebec, Yellow		do.	5	5	0	6	5	0
Do. Pitch		do.	3	0	0	3	4	0
Laths, log, Dantzic		per fath.	4	10	0	5	10	0
Do. Petersburg		do.	7	5	0		—	
Deals, Luleå, 1st Yellow,	3×9	do.	11	15	0		—	
Do. do. do.	$2\frac{1}{2}$×7	do.	9	0	0		—	
Do. Oscarshamn, unsorted Yellow,	3×11	do.	11	5	0		—	
Do. do. do.	3×11	do.	11	5	0		—	
Do. do. do.	3×7	do.	9	0	0		—	
Do. do. do.	3×6	do.	7	12	6	7	15	0
Do. Blankaholm, 2nd Yellow,	2×9	do.	11	5	0		—	
Do. do. do.	4×6	do.	8	10	0		—	
Do. do. 2nd White	3×11	do.	9	0	0		—	
Do. do. do.	3×9	do	9	5	0		—	
Do. Trangsund, unsorted Yellow,	3×9	do.	9	5	0		—	
Do. Archangel, 2nd White,	3×11	do.	12	7	6		—	
Do. do. do.	3×9	do.	11	5	0		—	
Do. Oserka, Yellow, 4th,	3×9	do.	10	10	0	11	10	0
Do. do. do.	4×9	do.	11	15	0			
Do. do. do 5th,	3×9	do.	9	0	0		—	
Do. do. do. do	4×9	do.	9	15	0			
Do. Nederkalix, 1st Yell.,	2×9	do.	13	15	0		—	
Do. Galatz, 1st White	3×9	do.	11	10	0		—	
Do. do. do. 5th,	3×11	do.	6	10	0		—	
Deals, Kovda, 3rd Yell.	3×9	do.	13	10	0		—	
Do. Mesane, 4th Yellow,	2×9	do.	10	5	0		—	
Do. do. do.	3×9	do.	9	5	0		—	
Do. Orrefors, 1st Yellow,	3×9	per fath.	11	10	0		—	
Do. Söderhamn inferior 5th Yellow,	3×9	do.	7	15	0		—	
Do. Riga, White	3×9	do.	6	10	0		—	
Battens, all kinds		do.	6	10	0	12	0	0
Flooring Boards 1in. prepared, 1st		per square	0	8	6	0	12	6
Do. 2nd		do.	0	8	9	0	10	0
Do. 3rd &c.		do.	0	7	6	0	8	6

HARD WOODS.

		£	s.	d.	£	s.	d.
Ash, Quebec	per load	3	12	6		—	
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	15	0	0	20	0	0
Cedar, Cuba	per ft. sup.	0	0	$5\frac{1}{4}$		—	
Do. Honduras	do.	0	0	$4\frac{15}{16}$		—	
Do. Tobasco	do.	0	0	$4\frac{13}{32}$		—	
Elm, Quebec	per load	4	0				
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0	0	$5\frac{3}{4}$		—	
Do. African	do.	0	0	$4\frac{19}{32}$		—	
Do. St. Domingo	do.	0	0	$3\frac{29}{32}$		—	
Do. Tobasco	do.	0	0	$6\frac{11}{32}$	0	0	$8\frac{11}{16}$
Do. Cuba	do.	0	0	6[illegible]		—	
Do. Lagos	do.	0	0	$4\frac{9}{16}$		—	
Oak, Dantzic and Memel	per load	3	5	0	3	15	0
Do. Quebec	do.	6	5	0		10	0
Teak Rangoon, planks	do.	16	0	0	17	10	0

Coming Events.

Wednesday, June 3.
NORTHERN ARCHITECTURAL ASSOCIATION.—Visit to the Consett Iron Works.

Thursday, June 4.
CHEMICAL SOCIETY.—Meeting at 8 p.m.

Sunday, June 7.
INSTITUTE OF SANITARY ENGINEERS, LTD.—Visit to the new Naval Hospital at Chatham.

Monday, June 8.
ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Business Meeting. Annual Elections at 8 p.m.

SOCIETY OF ENGINEERS.—Ordinary Meeting at, 7.30 p.m.

Tuesday, June 9.
R.I.B.A. EXAMINATIONS commence.

Wednesday, June 10.
INSTITUTE OF SANITARY ENGINEERS, LTD.—Meetings of General Purposes and Finance Committee at 4.15 p.m., Election Committee at 5.15 p.m., and half-yearly General Meeting at 7 p.m.

Thursday, June 11.
SOCIETY OF ANTIQUARIES OF LONDON.—Meeting a 8.30 p.m.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—Mr. Joseph Offord on "A Forgotten People the Hittites."

Saturday, June 13.
EDINBURGH ARCHITECTURAL ASSOCIATION.—Annual excursion to Bamborough Castle and Church.

Wednesday, June 17.
CHEMICAL SOCIETY.—Meeting at 5.30 p.m.

Thursday, June 18.
SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—Annual Dinner.

Monday, June 22.
ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Presentation of the Royal Gold Medal, 8 p.m.

New Companies.

CROMPTON & CO. (CROSTON), LTD.—Brick and tile manufacturers, stone and flag merchants. Capital: £5,000 in £1 shares.

GRANITE FLAG CO., LTD., concrete flag manufacturers, dealers in artificial stone, bricks, tiles, pipes, &c. Capital: £2,000 in £1 shares.

LAND DEVELOPMENT AND PROPERTY CO., LTD., 60, Coleman Street, E.C. Capital: £200,000 in £1 shares (100,000 five per cent. cumulative preference).

LONDON PRESSED HINGE CO., LTD., hinge manufacturers, tool makers, &c. Capital: £6,000 in £1 shares (2,000 preference).

MELLOWS & CO., LTD., roof glazing manufacturers, plumbing contractors, &c. Capital: £50,000 in £1 shares (25,000 five per cent. cumulative preference).

NATAL COAL TRUST, LTD., brick, tile and pipe manufacturers, &c., 65, London Wall, E.C. Capital: £150,000 in £1 shares.

ROBERT KEARSLEY & CO., LTD., varnish, japan and colour manufacturers and merchants, York Road, Ripon Capital: £140,000 in £10 shares (4,500 preference).

SUSSEX BRICK AND ESTATES CO., LTD., brick, tile and terra-cotta manufacturers, builders, &c. Capital: £100,000 in 10s. shares.

ARTILLERY AND ALBION CEMENT CO., LTD., cement manufacturers, &c., Greenhithe, Kent Capital: £20,000 in 15,000 preference shares of £10 each and £5,000 ordinary shares of £1 each.

BLIVET SOUND-PROOF FLOORING CO., LTD., joiners and manufacturers of flooring, timber merchants, &c., Albert Buildings, Queen Victoria Street, E.C. Capital: £20,000 in £1 shares.

B. J. PARKES, LTD., joinery and cabinet manufacturers, timber merchants, &c., Spring Head, Wednesbury. Capital: £2,000 in £1 shares (1,000 six per cent. preference).

JOHN BEDDOW & SONS, LTD., brick and tile manufacturers, dealers in builders' materials, builders, contractors, &c., Northywood Brickworks, Aldridge. Capital: £20,000 in £1 shares.

PARKERS' JOINERY AND CABINET CO., LTD., builders, contractors, plumbers, glaziers, slaters, carvers, timber merchants, 79, Pershore Street, Birmingham. Capital £500 in £1 shares.

EVANS & EVANS, LTD., dealers in stone, lime, cement, bricks, timber, &c., Railway Place, Belvedere, Kent Capital: £12,000 in £1 shares (2,000 six per cent. cumulative preference).

JOHANNESBURG LAND, BUILDING AND INVESTMENT CO., LTD., to acquire and deal in selected building plots or stands in Johannesburg, and to erect residential flats or houses thereon. Capital: £100,000 in £1 shares.

BRITISH AND COLONIAL TRANSFORMABLE BUILDING CO. (1903), LTD., builders, manufacturers of transportable and permanent buildings, &c., 8, Staple Inn, Holborn, W.C. Capital: £150,000 in £1 shares.

ERNEST S. STEPHENSON & SON, LTD., carpenters, joiners, timber merchants, &c., Bianca Road, Glengall Road, Old Kent Road, S.E. Capital: £3,000 in 2,000 ordinary shares of £1 each and 200 preference shares of £5 each.

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Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver.]

DURING THE WEEK ending May 23rd seventeen failures in the building and timber trades in England and Wales were gazetted.

T. W. CANNON, builder, Worcester Park. R.O. May 19th.

F. A. CHATFIELD, builder, Stapleford. R.O. May 19th.

E. H. WILLIAMS, builder, Aberystwyth. R.O. May 19th.

W. JAMES, builder, Brightlingsea. R O. May 21st.

C. H. JACOBSEN, builder, Enfield. R O. May 11th.

PASCOE & SON, builders, Earlsfield. R.O. May 14th.

S. LEE. builder, Bristol. R.O. May 15th. P.E., Bristol Guildhall, June 12th, at 12.

J. W. GROVES, builder, Sutton Scotney. R.O. May 20th.

S. HORSEY, builder and contractor, Bournemouth. R.O. May 22nd.

W. PARKINSON, builder, Southend-on-Sea. R.O. May 11th.

W. D. FOSTER, carpenter and joiner, Hitchin. R.O. May 16th.

T. H. KENT, plumber and decorator, Catford. R.O. May 15th.

G. R. SMITH, builder and joinery manufacturer, Abertillery. R O. May 16th.

M. NICHOLSON, painter and paperhanger, Walker. P.E., Newcastle-on-Tyne C.C., June 4th, at 11.

S. T. WALLIS, stonemason and bricklayer, Wadhurst. R.O. May 11th.

E. J. CHARLES, builder and contractor, Moseley and Wolverhampton. R O. May 15th.

HARRIS & CO, builders, Wormwood Street. London, E.C., and Bromley. Liabilities £5,700; assets £1,200.

JONES & ROWLANDS, architects, Mumbles and Swansea Liabilities £363; deficiency £5.

F. CHANDLER, builder, Gillingham. R.O. May 21st. First meeting, 115, High Street, Rochester, June 8th, at 12.15. P.E., Rochester C.C., June 8th. at 2.

MAYO & WILLIAMS, builders, Abertillery. R.O. May 23rd.

J. SMITH, brickmaker, Leigh. R.O. May 22nd. First meeting. 19, Exchange Street, Bolton, June 4th, at 11 30. P.E., Bolton C.C., June 17th, at 3 30.

C. WILLIAMS, contractor and builder, Swindon. First meeting, Great Western Hotel, Swindon, June 8th, at 2.30. P.E., Swindon C.C., June 24th, at 2.30.

CALVERT & SCALES. joiners, Calverley. R.O. May 16th. First meeting, O.R's, Bradford, June 5th, at 2.30. P E, Bradford C C., June 10th, at 10.

W F. RICHARDS & CO., plumbers, Manchester. R.O. May 15th. P.E, Manchester C.C., June 15th, at 10.

B. L. EVANS. builder and contractor, Ebbw Vale. P.E., Tredegar C.C, June 12th, at 10.30.

R. C. SCUTT & SON, builders and contractors, Lambeth. R.O. May 14th. P.E., Bankruptcy Court, June 30th, at 11.30.

W. PHILLIPS, builder. Abertillery. Gross liabilities £5,138; £3,702 expected to rank for dividend; assets £1,359; deficiency £2,343.

J. B. PLATT, builder, Stockport. Gross liabilities £6,215; £1.173 expected to rank for dividend; assets £823; deficiency £350.

T. NEEDHAM, joiner and builder, Darley Dale. R.O. May 11th. First meeting, O.R.'s, Derby, June 4th, at 3. P.E., Derby C.C., June 16th, at 11.

J H GREAVES, architect, 13, King William Street, London, E.C., late of Leeds and Pontefract. Unsecured liabilities £886; assets £1,191.

G. W. DORKING, builder, Kidderminster. R.O May 12th. First meeting, Lion Hotel. Kidderminster, May 29th, at 2.15. P.E., Kidderminster Town Hall, June 8th, at 2 15.

F. COUZENS, builder, Cardiff. Gross liabilities £12,720; £7,129 to rank for dividend; assets £1,987; deficiency £5,141. Failure attributed to "losses in the New Dock Brickworks Co., on contracts, and under the Workmen's Compensation Act."

HEATHERLEY BROTHERS contractors, Milford Haven. The debtors allege that they are not sure they are insolvent, but the O.R. believes the assets have been overestimated. In their deficiency account the debtors show an excess of assets over liabilities in April, 1900, of £7,223 3s. 1d., and nett profit of £500 from April, 1901, from work at Milford Haven.

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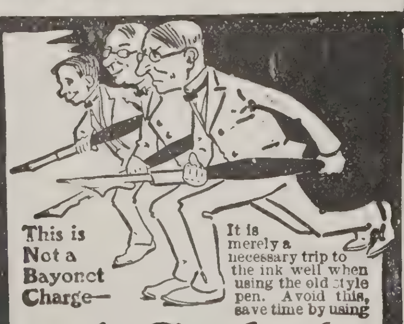

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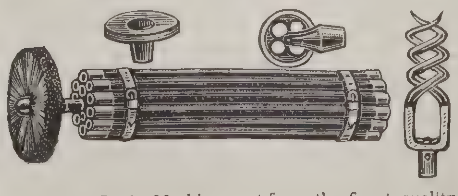

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THE

BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

June 10, 1903. Vol. 17, No. 435. 9, East Harding Street, E.C.

Fresh Archaeological Discoveries. WITHIN the last decade archæological explorers have made a wonderful series of discoveries on the sites of the early civilizations of the world. Crete especially has furnished astonishing finds. From time to time we have notified Dr. Evans's discoveries there; now still more discoveries have been made during the fourth season's work, notably the uncovering of "the germ of all future theatres" and of a smaller palace outside the main building. The details of these discoveries are before us, but from lack of space we are obliged to hold them over. Announcements of important discoveries at Nippur and Beni Hasan are also to hand. At the former site the American expedition under Professor Hilprecht has been singularly successful in excavating the great Temple of Bel, the results of which modify all previous conceptions of a Babylonian temple; while at Beni Hasan a gallery of smaller rock tombs than those which make the hillside famous have been discovered—the doors of some of the tombs explored were now opened after having been closed for 4,000 years' We shall publish the details of these important discoveries as soon as we can find the space to do so.

———

For Art in South Africa. WHILE the country is still tremulous with the effects of a fierce war, while the problem of labour is still engaging the closest attention, while speculators are working for no other end than money-making, it seems rather incongruous to talk of a Society for the Encouragement of Art in South Africa; yet such a society has been formed under the ægis of Sir William Richmond, with the support of Sir Edward Poynter, Mr. G. F. Watts, Sir John Stirling-Maxwell and Lieut.-General Sir John French. The object is to provide a comprehensive art education, including crafts, by the foundation of an academy of arts. "The development of native talent, undoubtedly latent in the Boer, an offspring of a nation which has ever been foremost in art, having produced some of the greatest painters in the world, is certain to be an important element in the elimination of racial feeling and the subsequent fusion of the two peoples." It is proposed to found a school of art at Johannesburg on similar lines to the Academy and Royal College of Art schools, and to organize an exhibition of pictures by British and Dutch masters; indeed, the whole meaning of "art" seems to have been narrowed down to painting. It is a painters' movement, and we are not therefore surprised to find architecture left alone; yet this of all the arts in a newly-constituted country deserves the first and greatest attention, especially when we remember the individual style of the Dutch settlers. A fusion of that style with British ideas would be the best effort that any society for the encouragement of art in South Africa could foster.

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Opus Sectile. THERE is a disadvantage in the use of mosaic for the decoration of a surface which is near the eye in that the difficulty of rendering the most important portions of figures with tesseræ of an average size is great, while a sufficient reduction in their size to enable the drawing to be satisfactorily expressed causes the portions in which the smaller tesseræ are employed to stand away from the rest of the surface by reason of the difference in texture. This difficulty was apparently felt by the ancients, and they adopted two means to overcome it. They either worked the whole subject in small tesseræ (which was the beginning of the pictorial treatment so unsuited to large decoration in mosaic) or used a combination of tesseræ and shaped pieces of marble or glass upon which lines were often incised or painted. This kind of mosaic was called "opus sectile" (or "scalpturatum" when the lines were incised), and though scarcely any perfect examples have come down to us, the soil of vineyards near Rome which occupy the sites of ancient villas is full of detached fragments of glass which have formed part of such decorations. Modifications of the process have been used in more recent times, where the desire for an absolutely permanent decoration has caused the rejection of the various forms of painting, and experience has shown the defects of the usual treatment of mosaic in situations where the wall can be approached closely; it therefore seems probable that in the hands of capable designers, who can also supervise the execution of the work, quite satisfactory results may be obtained by the admixture of "opus sectile" with mosaic. The drawback is generally the evenly vitrified surface of the material, which is rather harsh and unsympathetic and insists upon attention when the pieces employed are at all large. Mr. H. Holiday has lately been showing his friends a panel executed in "opus sectile" for a mission church in Mansford Road, Bethnal Green, as a memorial of a charitable lady. The subject chosen by the donors was "Charity," and the treatment desired was somewhat pictorial. Two female figures descend an external staircase having a light railing to minister to the aged and the poverty-stricken. The coloration is kept pale and light, with a reminiscence of Early Italian frescoes. One of the ministrants wears a blue robe and the other a cloak of a pale flame colour over a redder underdress; both of these have a pattern rather suggested than completed, just so as to break up the flatness of the material. Behind is a standing figure of an old man leaning on a staff, clad in a greenish cloak, whose head is characteristic and individual, and a half-clothed figure in front wears purple rags. Behind are the tops of houses and churches relieved against the blue of the sky. With the exception of the patterns already mentioned, the lines of architecture, drapery and flesh, and the slight tinting of the flesh, suggesting modelling and very successfully treated, the material is untouched. The panel is surrounded with a narrow repeating border painted in green upon white and will be isolated on the wall by a row of enamelled whitish squares and a beading of wood. The material lends itself even more successfully to a more strictly decorative and architectonic treatment, and one rather wonders it is not employed more often. Another work which is just completed in the same studio is a lofty window for Glasgow University with figures of great astronomers—Copernicus, Kepler, Galileo and Newton—and literary men—Raleigh, Burns, Byron and Carlyle. The figures are relieved against rectilinear plaques of very rich colour upon a ground of arabesques in pale greens and greenish blues. Much of the glass is very splendid as material, especially those portions made by Mr. Holiday in his own workshops, and the difficulties of costume have been well met.

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Echoes. MR. CHARLES J. BISHENDEN suggests that gauze wires should be fixed crossing one another under the dome of St. Paul's Cathedral so as to break the many echoes. He says: "When I sang at the Royal Albert Hall the day it was opened by her late Majesty the music caused quite a confused mass of sound, but some years afterwards when singing in the hall the wires placed under the glass roof enabled me to be distinctly heard in every word of my songs as far as the galleries. This same improvement could be made at St. Paul's Cathedral."

GLASGOW ROYAL INFIRMARY.

The Institute and the Managers.

THE managers of the Glasgow Royal Infirmary having finally rejected the criticisms of the Glasgow Institute of Architects regarding their rebuilding scheme, and refused the advice and assistance offered by that body, the Institute has felt it to be its duty to set the whole facts before the general public. From 1897, when the scheme was first mooted, till the end of 1899, the managers were engaged in endeavouring to obtain satisfactory plans from an architect selected (despite outside and inside criticism) by themselves, but those were finally set aside and a competition instituted. This was undertaken in January, 1900, when ten selected architects were invited to send in designs, Dr. (now Sir) Rowand Anderson being appointed assessor. Undeterred by previous failure, however, the managers (together with the Executive Committee now acting with them) first proceeded to have a species of preliminary competition among themselves, and as the result produced and issued to the competitors two "suggestive and illustrative" sketch plans. Of both of these the "Jubilee block" fronting Cathedral Square was an essential feature. The general lines of the sketch plans thus produced, and especially the situation of the Jubilee block, were found so radically faulty by most of the competing architects that all of them who had a previous reputation as hospital experts found it necessary to depart more or less entirely from them in the designs they submitted. Of the ten designs the assessor made a short leet of four, and a final selection of one, which he recommended for adoption. The Committee, influenced apparently by their own sketch plans and their "own opinion as to style of architecture," set aside the award, and chose a design, outside even the short leet, which was simply a more fully detailed copy of their "suggestive" draft.

The Glasgow Institute of Architects in May, 1901, addressed to the managers its first protest and appeal, criticising both the way in which the competition had been decided and the result arrived at, objecting to the whole arrangement of the selected plan as inadequate and out of date, and to the Jubilee block as shutting out the sun and air from the south, as well as at the same time vitally injuring the appearance of the Cathedral, and, finally, requesting that the whole of the plans should be submitted to one or more hospital experts before anything further should be done. To this no reply was received beyond a formal acknowledgment and reference to an official statement to the public which appeared in the press on May 18th, 1901. In this the criticisms of the Institute were in no way answered, and its suggestion of expert assistance was ignored, but it included (with reference to points raised elsewhere) the important statement that the managers now recognized "that the new hospital and not a section of it (*i.e.*, the 'Jubilee block') should be regarded . . . as a fitting memorial to the sixty-three years' illustrious reign of the Queen."

In June of the same year the Institute again addressed the managers, reaffirming its criticism, and offering to bear the expense of the course suggested should its opinions not be borne out. To this no reply was received.

On several occasions during the past winter, and especially at the annual general meeting of the infirmary, it was stated that the original scheme was to be retained *in toto*, and the work pushed on with vigour. Accordingly the Institute thought it necessary once more to draw the managers' attention to the fact that no adequate replies had been received to its previous communications, and to press for an answer, with the result only that it was assured by the managers that it was their intention, after the plans had been more fully developed, to submit them to "experts—surgical, medical, and mechanical."

This the Institute, in reply, pointed out would in no way meet the difficulties raised, that expert guidance would then come too late, and might well be set aside as at the first stage of the proceedings. To this last appeal the secretary has replied closing the correspondence.

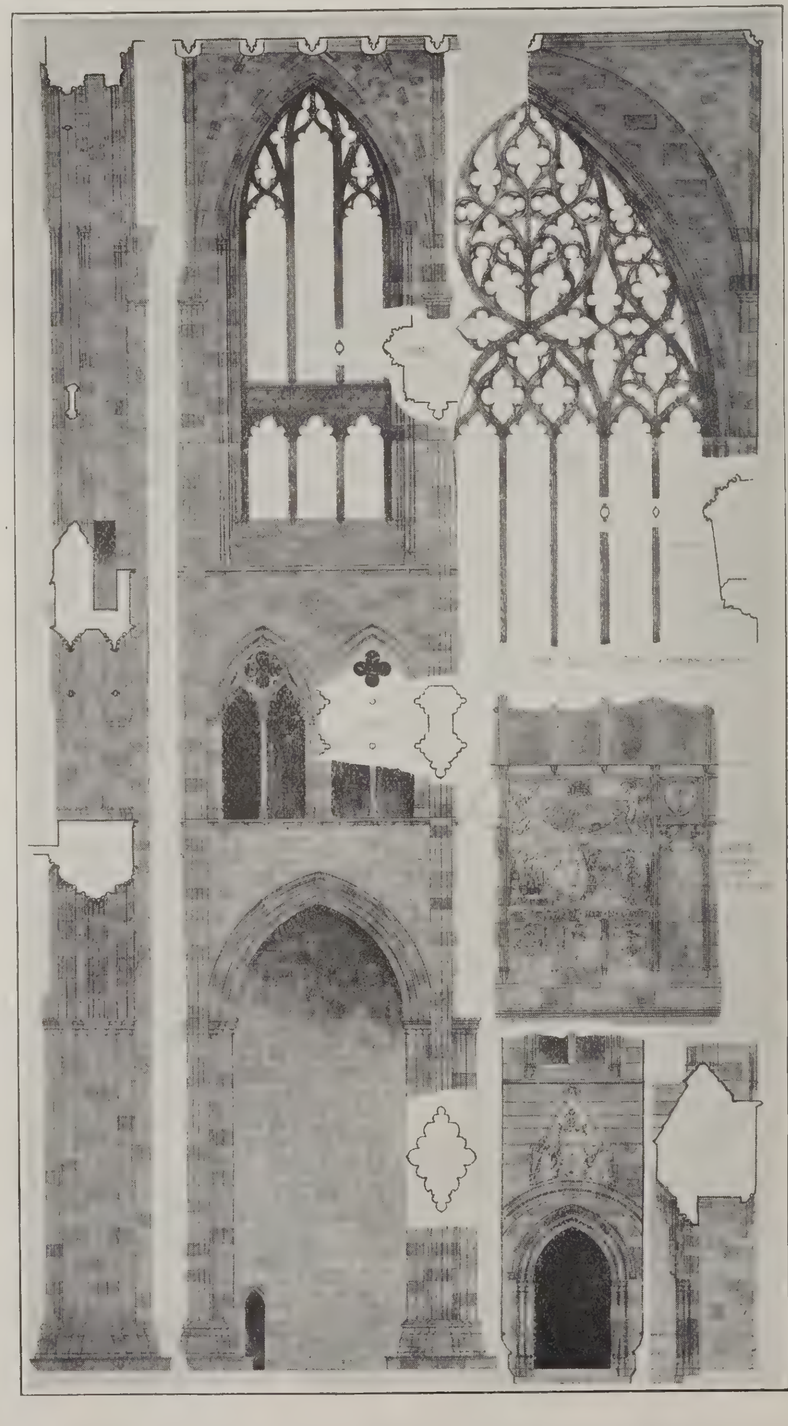
The Manchester Hospital for Skin Diseases will shortly be commenced in Quay Street. The plans of Messrs. T. Worthington & Sons, of Brown Street, Manchester, the architects, were selected in competition. Accommodation will be provided for thirty in-patients. The new buildings will be faced with Runcorn stone and brick. They will probably cost about £22,000. The sum of £13,000 has already been paid for the site.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Water in Basements.

LONDON, E.C.—TOO MUCH AQUA writes: "The accompanying drawing (not reproduced) shows a heating chamber in the basement of a block of offices which I am building. It has walls of stock brickwork 1ft. 11in. thick, set in mortar, with a 5in. concrete floor. This is all that has been executed to date, as the foundation consists of a running bed of sand. There is now between 3ft. and 4ft. of water standing in it. It was my intention before seeing the foundation to finish the chamber with a 4ft. 2in. brick



DESIGN FOR LIVERPOOL CATHEDRAL: DETAILS OF CHOIR. W. J. TAPPER, ARCHITECT.

lining, with a 3in. cavity between it and the main wall, and to finish the floor with 2in. of granolithic cement, but as the water rises from below the granolithic would not set on account of the upward pressure, so I have abandoned this. I shall be glad if you can advise me as to the best method of making this chamber watertight in as inexpensive a manner as possible."

Land drains should have been placed under the site to carry the water away easily and to relieve the pressure, but in the circumstances we think you can remedy the trouble by keeping the water out while doing the necessary work by compressed air. Then put a $\frac{3}{4}$in. sheeting of trowelled asphalt on the concrete floor and brick walls, and inside this build a $4\frac{1}{2}$in. face of brickwork and a 4in. concrete paving *in situ*, the walls and floor being finished with cement *trowelled* to a neat face. It would also be an advantage, if there is underground running water, to sheet-pile the site. The various methods of dealing with difficult foundations are dealt with somewhat fully in the "Excavator" section of "Specification, No. 6," to be obtained from the Publisher, Technical Journals, 6, Great New Street, E.C., price 5s. 9d., post free.

The Architects' Registration Bill.

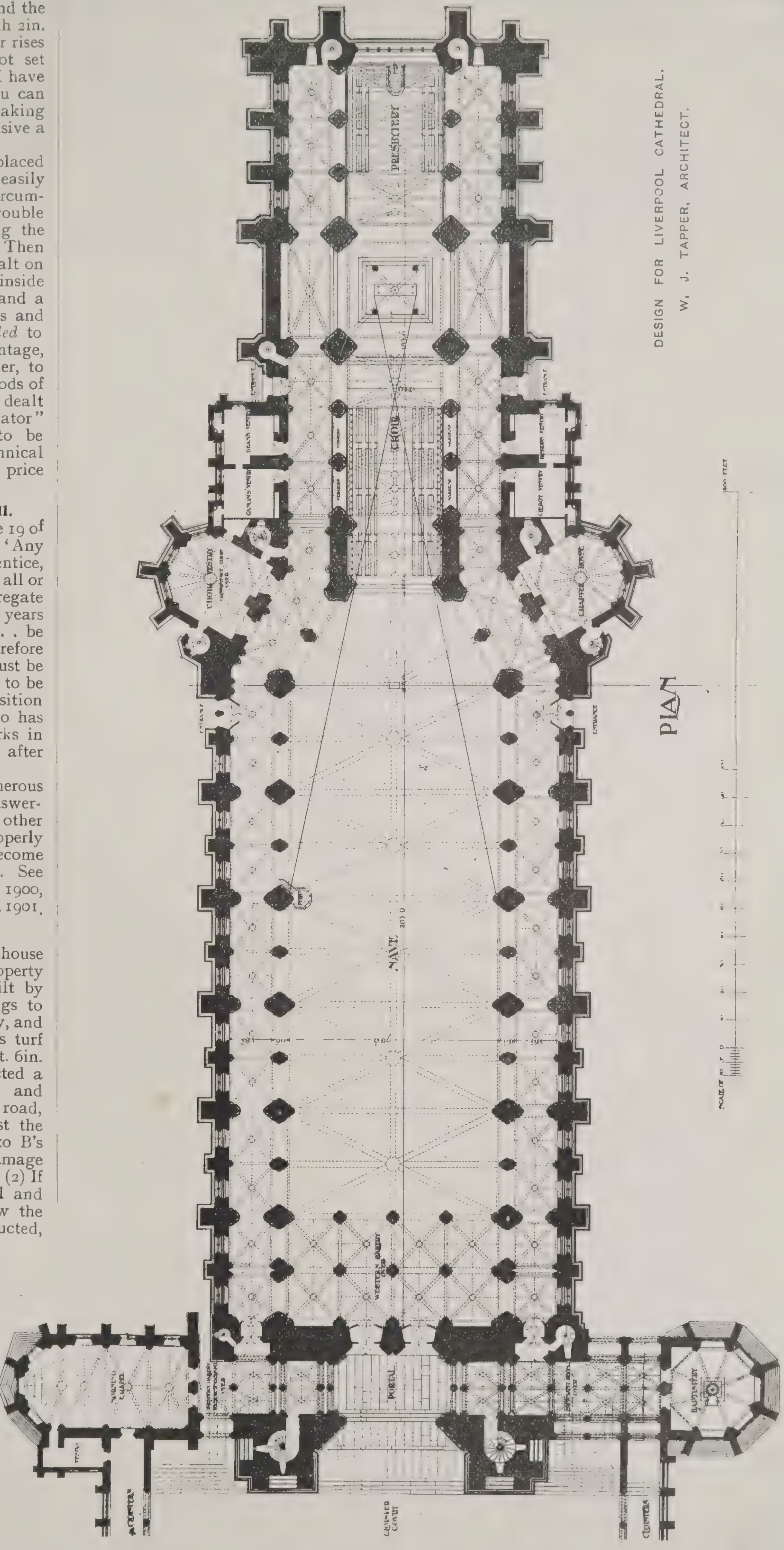
CORNWALL.—RONNE writes: "Clause 19 of the Architects' Registration Bill states: 'Any person . . . . who has served as apprentice, assistant or practitioner in architecture, all or either, for twelve years in the aggregate after having attained the age of fifteen years prior to the passing of this Act shall . . . be registered.' Is it to be understood therefore that an architect without a diploma must be twenty-seven years of age to be entitled to be registered? If so, what will be the position of a young architect, uncertificated, who has established a fair practice, and has works in hand that will not be completed until after January 1st, 1904?"

We have already replied to numerous enquiries about this Bill. To go on answering them over again, and to reply to other questions, when the Bill is not properly before Parliament—much less likely to become law—is a mere waste of time and space. See p. 324 of our issue for November 21st, 1900, and p. 426 of our issue for January 2nd, 1901.

Support to Adjoining Property.

SALOP.—G. D. L. writes: "A built a house on a piece of land adjoining. The property is divided by a 9in. retaining wall built by B nine or ten years ago. The footings to this retaining wall were very shallow, and A came to them when he took off his turf and top soil. The footpath is about 2ft. 6in. below A's ground, and A has constructed a footpath along the side of the wall and sloped it down to the footpath in the road, with the result that at the end nearest the road he has taken away the support to B's wall. B holds A responsible for any damage that may occur. (1) Is A responsible? (2) If so, and he agrees to underpin the wall and take the footings down to 12in. below the level of the footpath he has constructed, should A also build piers?"

As A, for his own benefit, has altered the natural ground in such a manner as to endanger B's property, there is no hardship involved when B asks to be placed in as good a position as he occupied before A's alterations, and the answers to your questions are therefore:—(1) A is responsible. (2) If piers be reasonably necessary to ensure stability, A should build them. I advise that, prior to any building work being commenced, A and B should agree in writing exactly what A should do, or possibly after A has executed the work he considers necessary B may demand further expenditure. G. S. M.



DESIGN FOR LIVERPOOL CATHEDRAL.
W. J. TAPPER, ARCHITECT.

Keystones.

Mr. W. Howard Seth-Smith, F.R.I.B.A., of 46, Lincoln's Inn Fields, London, W.C., has had his telephone number altered from "832 Holborn" to "4924 Holborn."

Partnership.—Mr. R. Walker, F.R.I.B.A., architect, of Windermere, has taken into partnership with himself his son, Mr. Frank H. Walker, and Mr. James Carter, of Windermere, late of Darwen. The practice will be continued as usual at Windermere under the style of Walker, Carter & Walker.

A New Hotel at Newcastle, to be called "The Empress," is being erected at the corner of Dean Street and the Side. The total frontage will be about 660ft. The cost will be about £120,000. Mr. Stephen Easten is the contractor, and Messrs. Oliver, Leeson & Wood, and Messrs. Marshall & Tweedy, of Newcastle, are the joint architects.

Old Doorways.—Mr. B. T. Batsford is about to publish an interesting volume illustrating old English doorways from Tudor times to the end of the eighteenth century, reproduced from photographs specially taken by Mr. W. Galsworthy Davie, whose delightful volume on "Old cottages and farm-houses in Kent and Sussex" has been so widely appreciated. The photographic plates will be supplemented by some historical notes and sketches by Mr. Henry Tanner, junr., author of "English Interior Woodwork."

A Roman Altar.—At the last meeting of the Newcastle Society of Antiquaries Mr. R. Oliver Heslop described a Roman altar which workmen employed by the Tyne Commissioners had found embedded in the river bottom. He said it corresponded with an altar already possessed by the Society, which was found during operations for the swing bridge. The two altars probably formed the right and left sides of a sanctuary dedicated to the deities typified on the faces of the stones. Both were found on the site of the old Roman bridge.

The Dundee Institute of Architecture recently visited Arbroath. Under the presidency of Mr. A. A. Symon the party were first conducted over Messrs. Keith & Blackman's heating and ventilating works, and afterwards visited the Abbey. There the president read an interesting paper on its history, pointing out the parts erected at the various dates. The lately rebuilt parish church was next gone over, and much admired. The Frazer Chapel in the cemetery, with its wonderful carvings, was next visited, and subsequently Hospitalfield, the residence of the late Mr. Patrick Allan Frazer, now transformed into a school of art.

Admiralty Appointments. — Among the posts in the Civil Service that offer opportunities to persons architecturally inclined are those in the Admiralty Works Department, which is responsible for the design and construction of all engineering and architectural works in the naval establishments at home and abroad, as well as for their care and maintenance. A little pamphlet just issued sets out the salaries. In addition to two Assistant Directors of Works at £1,000 to £1,200 a year, there is an engineering staff with salaries ranging from £200 to £850, and a large surveying staff. Entries to the staff are made in the lowest grades by open competitive examination held by the Civil Service Commissioners, whose office is in Burlington House, Piccadilly. Particulars may also be obtained from the office of the Director of Works, 21, Northumberland Avenue, W.C.

New Headquarters for the Essex Constabulary are being erected on the top of Springfield Hill, Chelmsford. The buildings are grouped in the form of a crescent, and stand back about 400ft. from the main road to Colchester. They are constructed of red brick and white stone, with red-tiled roofs. Messrs. Clare & Ross, of Chelmsford, and 1, West Street, Finsbury Circus, E.C., are the architects, having been successful in an open competition against thirty competitors. The total cost of the buildings will work out to about £18,000. The builders are Messrs. Smith & Son, of Witham; electric lighting and engineering work generally by Messrs. T. H. P. Dennis & Son, of Chelmsford; and the furnishing by Messrs. Hampton & Son, of Pall Mall. The quantity surveyor was Mr. J. S. Parmenter, of Chelmsford and Ipswich.

Liverpool Pierhead Baths. — Alderman Maxwell, chairman of the Watch Committee of the Liverpool Corporation, suggests that a handsome block of buildings for tramway and other offices might be erected, and a complete scheme for public baths, &c,, might be constructed, so to speak, upon the top storey or roof. He contends that the baths will thus be in a position of the least value as far as site is concerned, leaving the whole of the floor below free for offices which would bring in a good rent. "Of course the water would have to be pumped up to supply the baths, and the overflow water might well be used to run hydraulic lifts. Further, an arrangement could be devised so that the water of the baths could be connected with a complete system of automatic sprinklers through the whole building. This would materially reduce the risk of fire, and should considerably reduce the insurance premiums. As only a comparatively small portion of the roof would be required for the bath establishment, the balance, or part of it, could be utilized for a café and roof-garden in connection with it."

BRICKMAKING.

The new Fiske System.

In a paper read before the American Ceramic Society Mr. J. P. Fiske recently described the process of brick manufacture now in operation at the works of the Fiske Brick Co., Dover Point, Newhaven. At these works the semi-plastic process is adopted, and the method followed is the ordinary one until the bricks are delivered from the press on to the belt conveyor belonging to the machine. From this belt they are at present transferred by hand (though the machinery for transference has been devised) to one or other of two setting-up racks; but from this point onwards the bricks are untouched by hand till delivered into store or delivery waggon. The essential feature of the Fiske system lies in the fact that the bricks are handled in mass and not separately. The setting-up racks consist of 150 wooden bars about 20in. long, arranged parallel to each other at a convenient height. These bars are spaced 1½in. apart, and are of such a width that a brick laid across them as a stretcher is supported at its middle and at both ends. The first layer of the unit stack of bricks consists of five rows of stretchers extending from end to end of the rack. These rows are spaced 1in. or so apart, and on them is next placed a layer of headers, also loosely spaced. Another row of stretchers follows, and so on, till there is a stack six bricks high. When complete the whole stack of 1,500 bricks is lifted as a single unit by means of an electric crane fitted with a special brick-lifter. This lifter has a series of 149 steel fingers, which can pass in between the wooden bars of the setting-up frame and underneath the bottom row of stretchers, enabling the whole stack to be lifted and handled as a unit. This unit is transferred to the drying kiln, where it is deposited on a similar rack to the setting rack, but built of iron instead of wood. In this kiln the bricks are dried by hot air, and when ready are transferred to the burning kiln. The floor of this is fitted with a firebrick rack, on which the first layer of unit stacks is deposited. On this layer other stacks are deposited, the fingers of the brick-lifter passing into the spaces between the headers of the stacks already in place. After burning, the crane and brick-lifter are again used to transfer the finished bricks to store and pile them up there. Both kilns are, of course, specially designed for being worked by means of the brick-lifter. The burning kiln consists of several chambers, which are worked on the continuous system. Each chamber has a removable cover of concrete and iron, and is filled and emptied from above.

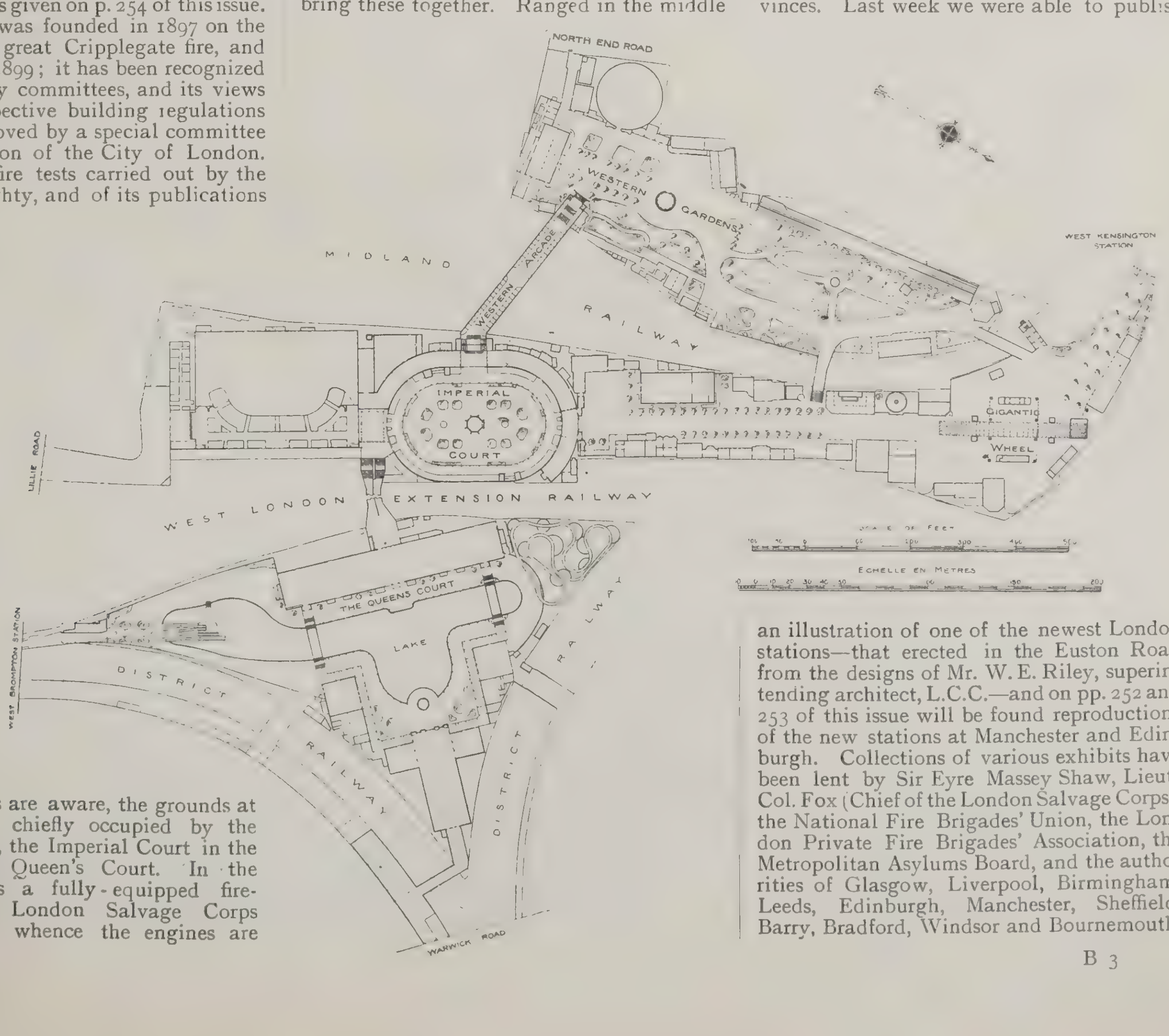
Law Cases.

Electric Street Boxes as "Buildings."—At the Mansion House Police Court the Charing Cross and Strand Electricity Supply Corporation were recently summoned for constructing an underground chamber for electric wires at the corner of Mincing Lane and Fenchurch Street without first serving a notice under the London Building Act, 1894. There were six similar summonses in respect to chambers in other parts of the City. They had been adjourned from time to time pending a decision of the High Court as to whether the underground chambers were "buildings" within the meaning of the Act. Mr. Bale, solicitor, in support of the summonses, said the chambers were 7ft. or 8ft. square. The case in the High Court had been decided against the defendants. The matter now merely resolved itself into a question of penalties and costs. Mr. Daldy, for the defendants, said that this was not a case of an offence. People were justified in doubting whether an electric-light box in the street, which was really nothing more than a local enlargement of the electric conduit, was a building coming within the Act. Sir Joseph Savory asked what penalty was imposed by the magistrate at the Guildhall. Mr. Daldy replied that the penalty was 1s. on each summons. Sir Joseph Savory said he thought that a nominal penalty of 1s. on each summons would suffice. He should make an order for £10 10s. costs on the first summons.

The Supervision of Buildings by Architects.—The case of *Steljes* v. *Ingram* recently came before the Court of Appeal. This was an application by the defendant for a review of taxation of the costs of an action in which the plaintiff sued the defendant, in his capacity of an architect, for negligence in supervising the erection of a building. The action was tried before Mr. Justice Grantham and a special jury, when the plaintiff was awarded £20 damages, the learned judge declining to make a special order as to costs. The costs were subsequently taxed on the assumption that the action was "founded in tort" and amounted to the sum of £329. In concluding his judgment Mr. Justice Phillimore said: "The defendant is sued because he undertook to supervise the erection of a house with due care and skill, and because he did not fulfil his undertaking. No other question except that of damages was in issue. Looking at the case in another way—(*a*) the case was not launched for a breach of duty; (*b*) assuming that an architect's profession is one to which it may be said that appropriate duties are attached by the general law (which I doubt), it is not alleged, nor do I know that the particular acts complained of would-be acts which fall within that general scope of duty; and (*c*) lastly, if they were, that might be reason enough to support an action in tort where the forms of action were material, but not enough to make the substance of the matter tort. The appeal must be allowed, with costs."

THE INTERNATIONAL FIRE EXHIBITION.

THE International Fire Exhibition now open at Earl's Court, London, S.W., is undoubtedly the most extensive and representative collection of fire exhibits ever brought together in this country. One sees there the whole history of fire prevention and fire rescue, from the days of Rome to modern times. Such a result would only be possible with the hearty co-operation which the authorities at home and abroad have extended to the organizers of the exhibition, and it needs but a glance at the long list of distinguished names on the several committees to appreciate how comprehensive the exhibition has been made and how influential it is likely to be all over Europe. The inception of the exhibition is due to the British Fire Prevention Committee—of which Mr. Edwin O. Sachs is the chairman—a committee which has already done great service to constructors and to the public by the impartial and strictly accurate tests which have been carried out with various materials and systems. These tests are conducted at the Committee's new station at Westbourne Park, in brick huts supplied by a large gas main and connected with Roberts-Austen pyrometers for recording the heat: a view of the huts is given on p. 254 of this issue. The Committee was founded in 1897 on the occasion of the great Cripplegate fire, and incorporated in 1899; it has been recognized by Parliamentary committees, and its views regarding retrospective building regulations have been approved by a special committee of the Corporation of the City of London. The number of fire tests carried out by the Committee is eighty, and of its publications seventy-three.



As most persons are aware, the grounds at Earl's Court are chiefly occupied by the Western Gardens, the Imperial Court in the centre, and the Queen's Court. In the Western Gardens a fully-equipped fire-station of the London Salvage Corps has been erected whence the engines are driven into the Empress Theatre during the progress of the great fire spectacle there—"Fighting the Flames." The feature of this dramatic show is the burning of a four-storeyed warehouse at the corner of two converging streets and the rescue of the inmates. The manner in which the fire is conducted is astonishingly realistic; the flames shoot upwards in great size, and volumes of water are pumped into the building from the numerous steamers. Even to those familiar with stage settings the result is amazing, for huge flames and immense quantities of water are strangely difficult to deal with. Few persons, indeed, are aware how the spectacle is conducted without damage, and it is therefore of interest to note that the floors of the building slope downwards and have gutters at the bottom which carry off the water, while numerous gas pipes are provided to produce the sheets of flame.

In the colonnade around the Imperial Court are exhibits of various firms, to which reference will be made later. In the galleries behind the western side of this court a most interesting collection of curios, historical relics, photographs, engravings, &c., is exhibited. Much labour has been required to bring these together. Ranged in the middle of the rooms are old fire-engines, squirts and other antiquated appliances, such as a two-man manual dating from 1626, when it was necessary to obtain permission from the mayor or the beadle before it could be used! The manual was carried to the fire on hand poles and shoulder straps. But even this was a wonder of effectiveness when compared with the bucket and squirt. We see an improved form of it in Hogarth's engraving "The Times," where the great artist has persisted in his satire and demoniacal wrongness of everything.

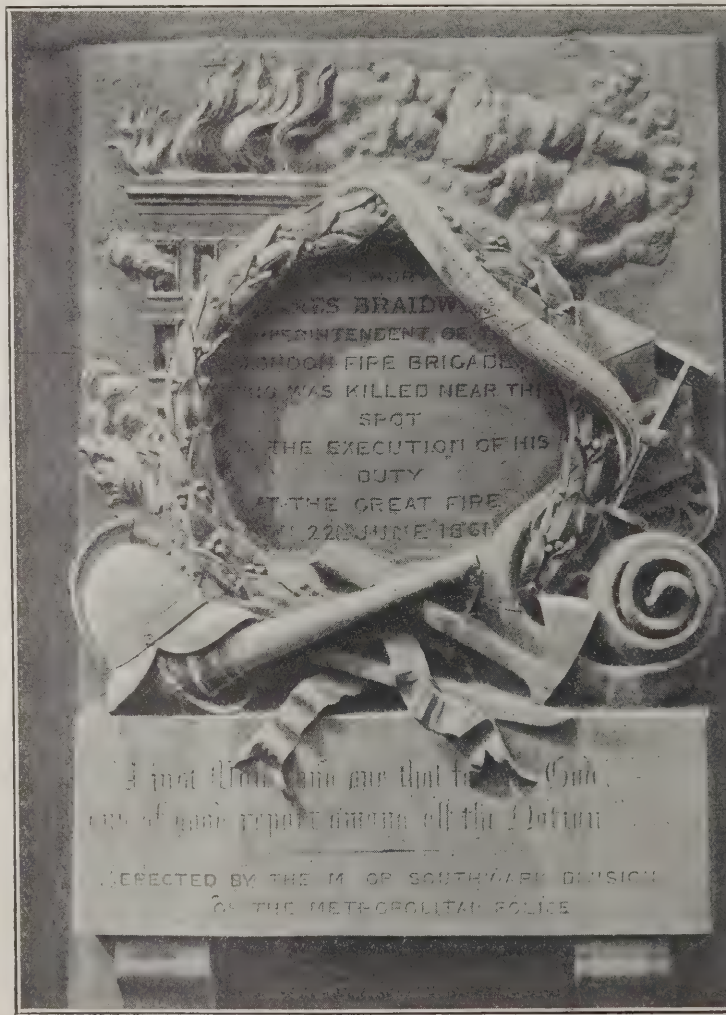
Among the large number of pictures, engravings and photographs hung in these galleries at the back of the Imperial Court are some fine water-colour drawings, by Mr. R. Phené Spiers, of the ruins of Paris after the Commune (1871), showing how complete was the work of the wreckers on the Tuileries, the Palais de Justice and the Hotel de Ville. Numerous photographs are exhibited of buildings gutted by fire—one, especially striking, of some buildings in St. James's Street, Montreal, where the water froze in great masses of icicles. Attention is drawn to the photographs of new fire-brigade stations in London and the provinces. Last week we were able to publish an illustration of one of the newest London stations—that erected in the Euston Road from the designs of Mr. W. E. Riley, superintending architect, L.C.C.—and on pp. 252 and 253 of this issue will be found reproductions of the new stations at Manchester and Edinburgh. Collections of various exhibits have been lent by Sir Eyre Massey Shaw, Lieut.-Col. Fox (Chief of the London Salvage Corps), the National Fire Brigades' Union, the London Private Fire Brigades' Association, the Metropolitan Asylums Board, and the authorities of Glasgow, Liverpool, Birmingham, Leeds, Edinburgh, Manchester, Sheffield, Barry, Bradford, Windsor and Bournemouth.

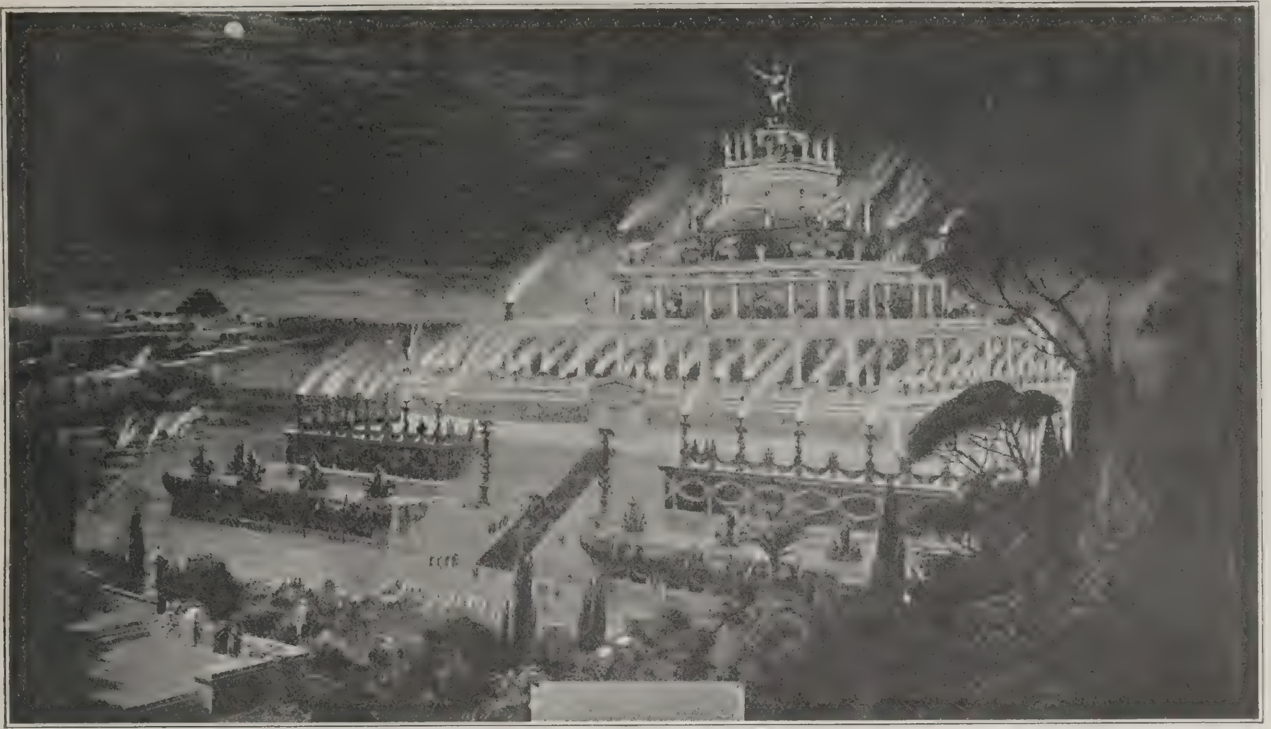
THE "TIMES," BY HOGARTH (1762).

In addition, the British Fire Prevention Committee has lent numerous materials subjected to fire tests, and the Lightning Research Committee has lent a most interesting collection of photographs of buildings struck by lightning.

Among the exhibits will be noticed several relating to James Braidwood, about whom it is fitting to recall a few facts. In May, 1856, he read a paper before the Society of Arts on "Fires; the best means of preventing and arresting them, with a few words on fireproof structures." He expressed a hope that the new Building Act which had come into force on the preceding January 1st would repress some of the great evils that had arisen, but feared that the meaning of the new Act would be "subverted by some such subterfuge as destroyed the efficiency of the previous Act." In this he was truly prophetic, for his life was sacrificed in 1861 in consequence of the application of a subterfuge of the character he had in mind in 1856. The building in Tooley Street which was responsible for the fire of 1861 (at which Braidwood lost his life) rapidly spreading beyond control had been recently erected and very considerably exceeded the limit of 216,000 cub. ft. permissible for such a building. The case was taken by the district surveyor before the magistrate, who considered that the floors constructed with brick arches on cast-iron girders about 13ft. apart, supported on iron posts, constituted party walls and met the requirements of the Act, altogether overlooking the action of fire (among the merchandise in the building) on unprotected iron and the existence of numerous openings through the brick floors. The magistrate's decision was allowed to remain unchallenged until 1892, when a corresponding case was taken to a higher court and a decision given in 1894 that a so-called fireproof floor was not a party wall within the meaning of the Act. On this page is illustrated the Braidwood memorial in Tooley Street. It was erected by the Southwark division of the Metropolitan Police, showing how closely Mr. Braidwood worked with the police, a fact which partly explains how he was able to do so much with the small number of men and appliances under his direct command.

In the large hall of the Queen's Court the chief exhibit is the German official one. It is quite unique of its kind, for it embraces the historical, art, municipal and commercial sides of fire service and fire-prevention in the German Empire. The arrangement of the exhibit has been in the hands of a German sub-committee of considerable influence, formed at the instance of the British Fire Prevention Committee, whose representatives visited Berlin and met with a most hearty reception. The arrangement of the three groups of history, literature and art were undertaken by Dr. Franz Weinitz, of Berlin. Among the large number of pictures are twenty drawings of fire catastrophes of the past lent by the German National Museum in Nuremberg; and other exhibits of special interest are some photographs of the Fire Brigade Monument erected by the City of Berlin, with a striking group (by the sculptor Riesch) of a fireman rescuing a woman and child; and the large canvas by Crown Surveyor Jaffé representing "The Funeral Pyre of Hephæstion" — an architectural restoration of great extent, as will be seen by the reproduction of it on the opposite page. Hephæstion, Alexander the Great's commander-in-chief and his dearest friend from childhood, died suddenly in the royal palace at Ecbatana during the festival in honour of Dionysius. The king caused the body to be carried with great military pomp and ceremony to Babylon, and there, from the design of the architect Demokrates, built the funeral pile here depicted. Alexander and his friends contributed about £2,500,000 to defray the cost of constructing the funeral pile, and about 10 stadia of the walls of Babylon were ordered to be pulled down and the bricks removed to form the foundations. The building was square at the base, east side measuring about 650yds., and rose in five terraces. The lowest terrace was formed of the prows of 240 vessels captured from the enemy, above which stood a row of fully-armed figures with two bowmen kneeling at the feet of each. The second terrace, decked with wreaths at the base, was crowned by a row of magnificent candelabra surmounted with eagles bearing cressets between their wings. On the third terrace were displayed hunting scenes sculptured in relief. On the fourth terrace stood the figures of fighting centaurs in solid gold. And, finally, on the fifth terrace were pairs





THE FUNERAL PYRE OF HEPHAESTION. A RESTORATION BY CROWN SURVEYOR JAFFÉ.

of winged bulls in gold. The summit was ornamented with trophies of arms and hostile spoils, within which hidden figures of sirens and musicians sang the funeral dirge of Hephæstion, whose statue of gigantic proportions crowned the edifice. The entire army of Macedonia, with the king at its head, took part in the sacrifices and funeral ceremonies.

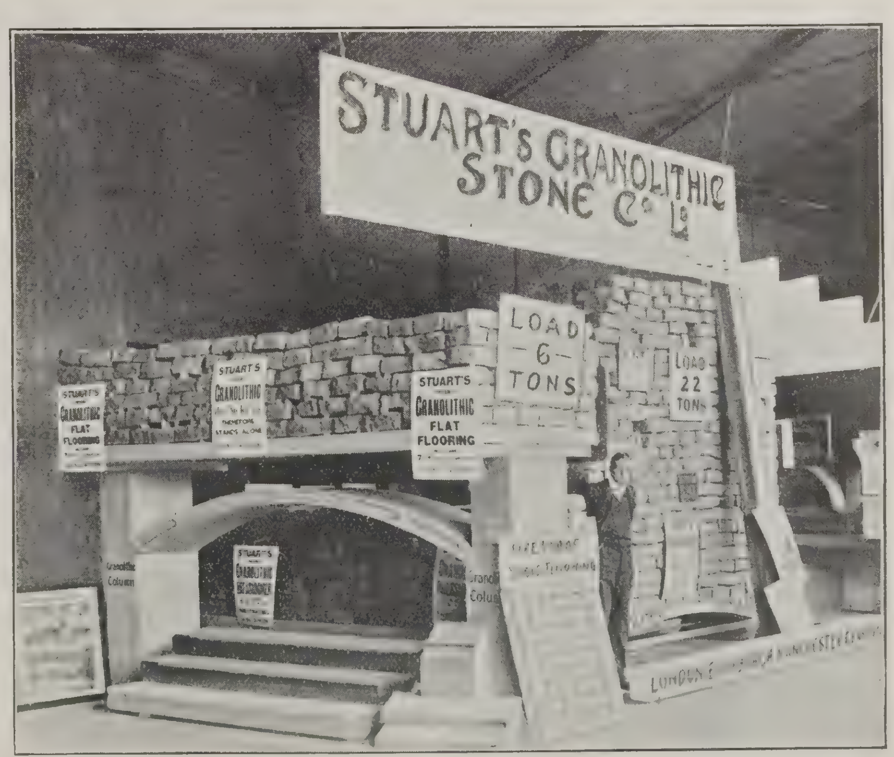
Among the modern exhibits in the German Court are, of course, all kinds of fire appliances, as well as some plans of a new fire-station in Berlin, the ground-floor plan of which is given on p. 254 of this issue.

Having thus briefly described the official and semi-official exhibits we may refer to the trade firms who show all their latest systems and devices. These are grouped, for the most part, around the Imperial Court and in the gallery of the Queen's Court. Taking the former first, we notice on entering the exhibit of Stuart's Granolithic Stone Co., Ltd., consisting of some floors heavily loaded with granite setts—one, an arch of 9ft. span, with a thickness of 3in. at the crown and $8\frac{1}{2}$in. at the springing, carrying a dead load of 22 tons. The material consists of Dalbeattie granite crushed and mixed with Strood cement, moulded, and allowed to set. We have lately had occasion to describe more fully the preparation and handling of this well-known material at the firm's works at Millwall Dock, so that there is no occasion to repeat the details: suffice to say that floors, walls and staircases can be formed of Granolithic which, while being extremely light, are able to withstand the greatest stresses. The material is much used in all parts of the kingdom. On this stall also are a piece of fireproof stable flooring made of Granolithic and some coloured specimens of the material.

We next come to the stall of Messrs. J. A. King & Co., of 181, Queen Victoria Street, E.C. (see next page). This is attractively constructed to show the application of the "Mack" slabs to ceilings, floors, walls and other parts; as well as "Mack" fireproof pugging for wooden floors, and "Mack" lathing for encasing columns, girders and stanchions, forming coves, &c. All the slabs shown on the stall have been plastered with "Gypo" fire-resisting plaster; it dries quickly and may be painted about forty-eight hours after being applied, while it has the additional advantage of being very light in weight. Messrs. King are also manufacturers of the British steel corner-plate for forming the external angles in plastering, a device consisting of a galvanized steel rail fixed with metal clips to the brickwork which saves much labour in plastering and does away with the necessity for screeds.

Messrs. Shand, Mason & Co., of 75, Upper Ground Street, Blackfriars Road, S.E., have an extensive exhibit of their steam fire-engines, escapes, ladders, couplings and numerous other accessories. It is worthy of note that the six new Shand-Mason engines just delivered to the Metropolitan Fire Brigade are fitted with a patent device for allowing variable steam-expansion (which reduces weight, economizes fuel, lessens noise and prevents sparks) as well as oil-fuel furnaces. With these engines the Brigade are able to raise a steam-pressure of 100lbs. from cold water in less than $5\frac{1}{2}$ minutes, or where a pressure of 30lbs. is maintained in the boiler by a gas heater 100lbs. pressure can be got within two minutes of lighting the oil burner.

The next stall is occupied by The Shannon, Ltd., of Ropemaker Street, E.C., where all kinds of up-to-date office furniture, letter-filing cabinets, desks, &c., are shown. The firm has latterly erected large new works at Dalston—of which Messrs. Edwin O. Sachs & Hoffman are the architects—fitted with the most modern wood-working machinery driven by electric power; a drawing of it is exhibited in the Architectural Room at this year's Academy.



The Columbian Fireproofing Co., Ltd., of 37, King William Street, E.C., have a very interesting stall. It consists of a curved roof of 12ft. span with a pointed roof on one side and a Mansard roof on the other, each having a dormer formed in it – all on the firm's special system of construction. In forming the arch specially-shaped metal bars are spaced across and the concrete thrown around them on to a centering. With floors a similar method is adopted. Here the steel bars are from 1in. to 2½in. deep and are suspended from steel stirrups that hang over the joists; 3½in., 4in. and 5in. heavy ribbed bars are put between main girders or resting on walls, and thus the use of ordinary steel joists is eliminated. In panelled floors all the joists and main girders are completely encased with concrete and the underside protected by slabs secured with concealed anchors, in spans up to 8ft., using 2in. and 2½in. ribbed bars hung in stirrups to carry from 4 cwt. to 12 cwt. The double form of construction is similar, except that the bars are laid on the lower flange of the joists and a wooden centering placed below to receive a 2½in. concrete ceiling. Columns are encased with not less than 2in. of concrete. Sewer pipes are also formed with steel ribs and concrete; the ribs are very light, and thus effect considerable saving in cartage, while the covering of them with concrete can be easily effected on the spot The firm prepares plans for the steel construction of their floors free of charge, and have just had completed their new constructional works at St. John's Wood, where the latest machinery has been installed. They have carried out a number of extensive contracts throughout the country, including some of the largest electric-power stations, warehouses, banks and other buildings.

Messrs. Merryweather & Sons, Ltd., of Greenwich Road, S.E., and 63, Long Acre, W.C., show the several kinds of steam fire-engines of which they are the well-known patentees and makers, including a motor engine, as adopted by the fire brigades of Brighton, Liverpool, Portsmouth, Plymout and other towns. Merryweather's pater "Kemik" fire engine carries 60 gallons powerful fire-extinguishing liquid, with hos and fittings for use from street hydrant The "Valiant" is a very useful portabl light engine for country mansions, weighin 11 cwt. and having a capacity of 200 gallor a minute; while another handy appliance the "Hatfield" pump for augmenting th pressure in the fire mains to protect the roo and top floors of high buildings, and als for water supply to country houses an hotels.

Mr. A. E. Brown, of Essex Wharf, White chapel, E., has a stall showing the "Frazzi system of fire-resisting floors, ceilings, parti tions, roofs and firebricks. In this syster hollow terra-cotta blocks are employed wit concrete over them; the exhibit shows a fla soffit with 4ft. centres providing for a safe loa of 3 cwt. per sq. ft., and a slightly curved soff with 3ft. centres providing for a safe load 6 cwt. per sq. ft. Of the materials used i this system Mr. Brown is the sole import into the British Isles, France, Belgiun Holland and the South African Colonies.

Passing now to the gallery in the Queen Court we find a large number of stalls.

Messrs. Homan & Rodgers, of 17, Grace church Street, E.C, have a stall built up wit steel stanchions and girders showing the co struction of their fire-resisting floors. Homan improved steeled concrete fireproof floor co sists of joists spaced at 4ft. 6in. centres, wit tension rods between, and the whole encase with concrete; the floor-boards being naile down on to wood fillets. This is claimed t be the cheapest form of fireproof constructio extant, and spans up to 30ft. can be forme without the use of main girders. Homan fireclay hollow-brick floor, as shown by th illustration on the next page, consists of triar gular-shaped fireclay bricks (grooved to affor a good key for the plaster below and th concrete above) fitted in between the joist (which are spaced at 1ft. 6in. centres) an finished with flooring in the usual manne Spans up to 24ft. may be executed withou main girders. The floor is very shallow, non-conductor of sound, requires no cente ing, and can be very cheaply constructe Some very fine photographs of work carrie out by this firm are exhibited on the stall.

The New Expanded Metal Co., Ltd., of Yor Street, Westminster, S.W., have erected building illustrating their system of constru tion. Expanded metal is the adaptation of a old amusement—"walking through a laure leaf," for the principle of forming a series cuts and then pulling out the material is th same in both. The building which forms th company's chief exhibit is enclosed wit expanded-steel fencing, and within thi enclosure are shown expanded-steel tre guards, builders' screens, window guard door mats, hat racks, clothes' locke and various other made-up goods of th company's manufacture; also a length expanded steel core for conduits, sewer work &c. Briefly, the building is about 31f long by 20ft. wide and 12ft. high to th eaves, with a couple roof. Many of th company's systems are shown in this exhibi A floor of 10ft. span is built 3ft. from th ground, so that the underside can be see and the method of temporary centerin thoroughly inspected. The walls are con structed on various systems, showing hollo and solid exterior and interior walls an partitions. A suspended ceiling is erect and the roof covered with slabs on a ne principle. In each system a portion of th expanded-steel framework is left uncovere so that not only the finished work appea but also the framework supporting it. A together the exhibit is worthy of caref inspection, as the methods employed can b adapted in so many ways.

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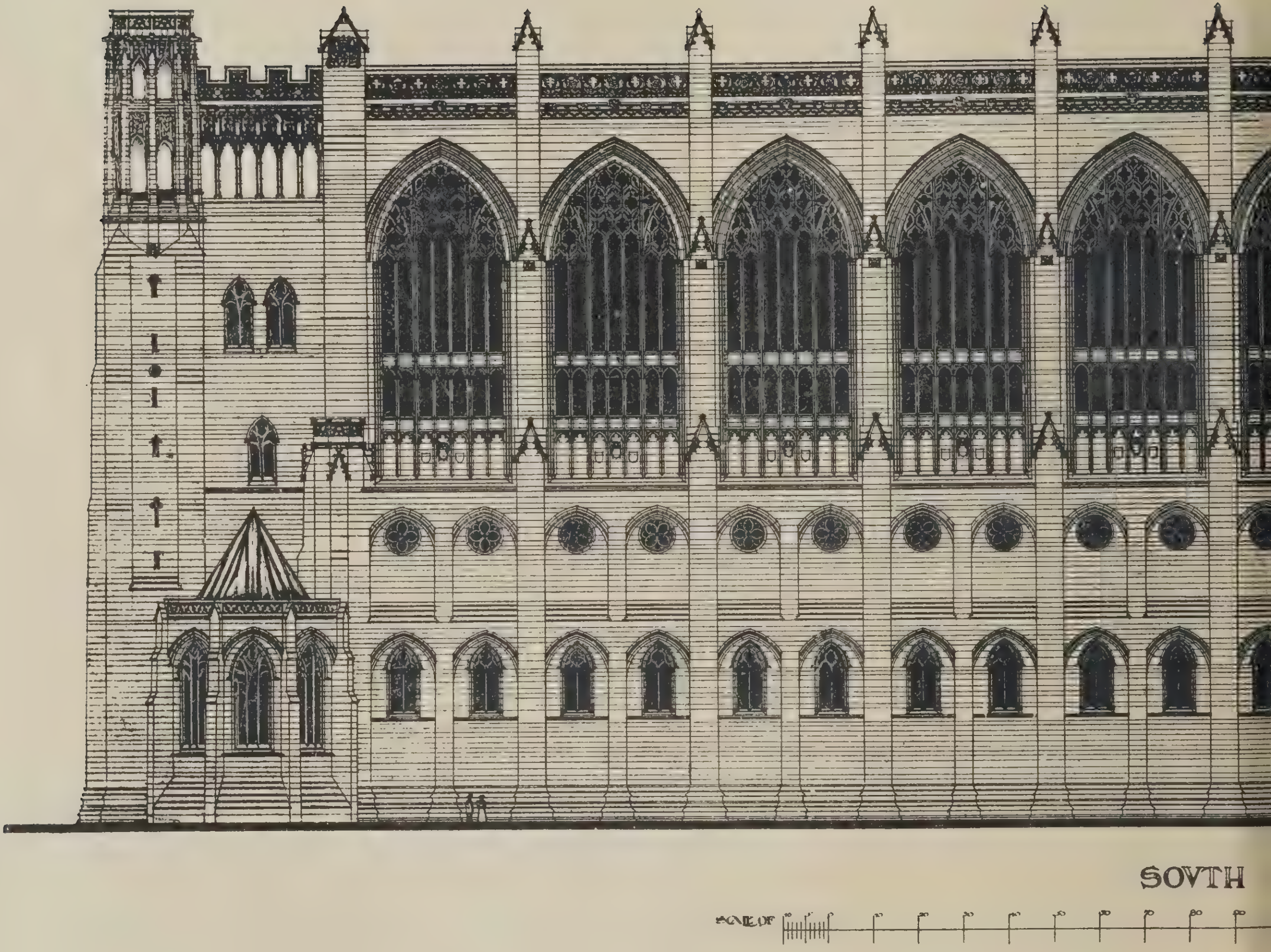

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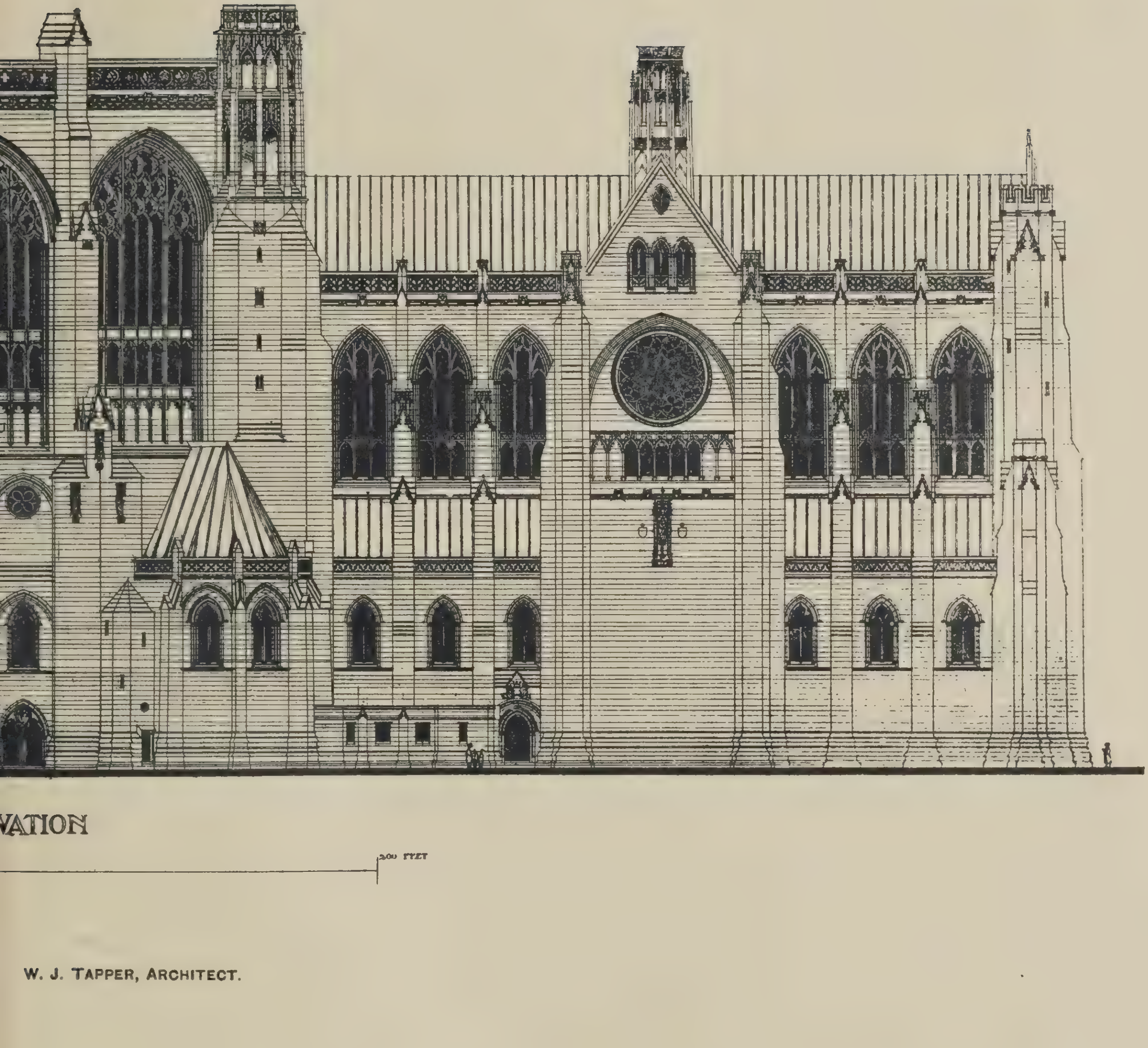
DESIGN FOR LIVERPOOL CATHED



VATION

200 FEET

W. J. TAPPER, ARCHITECT.

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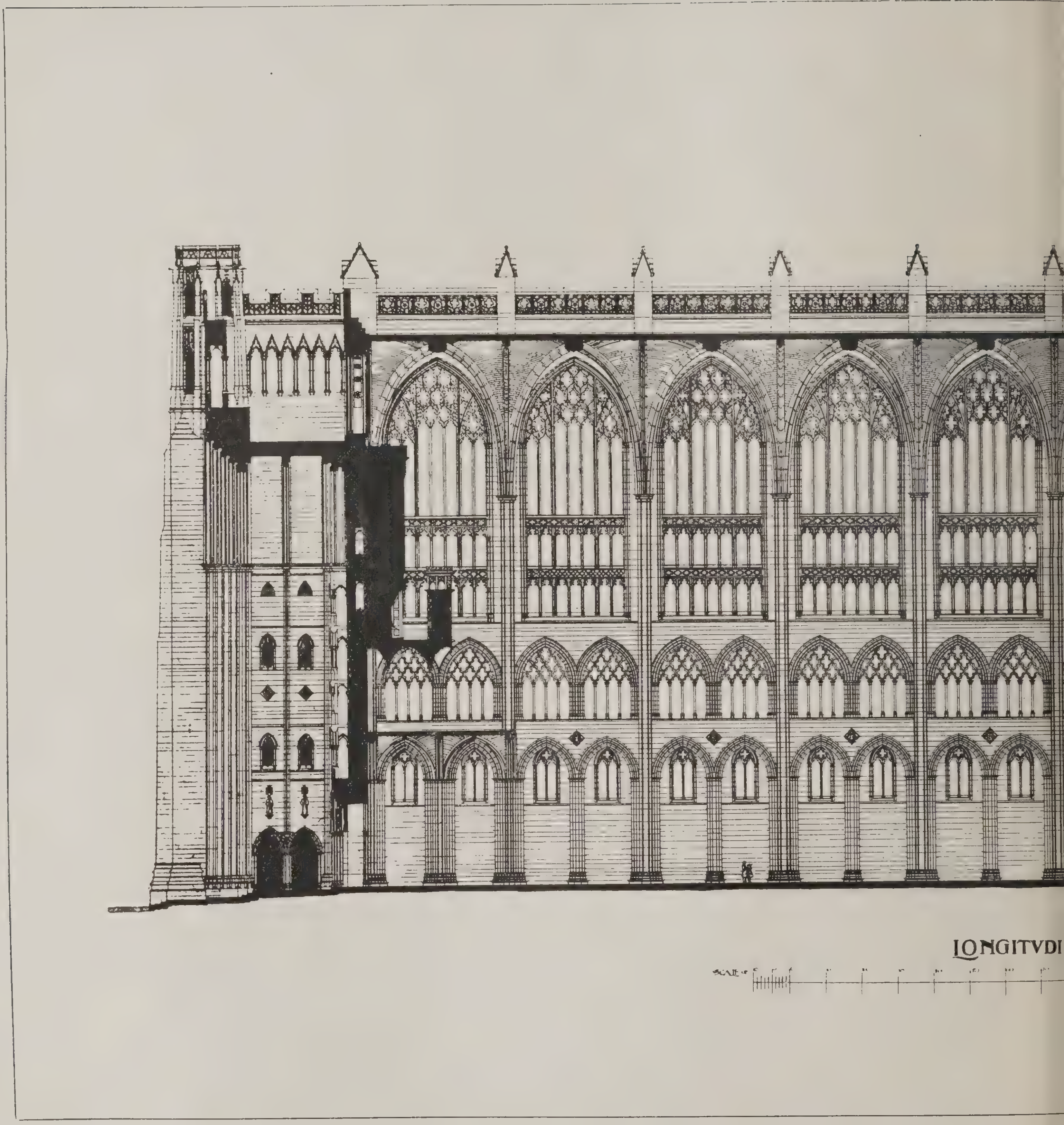

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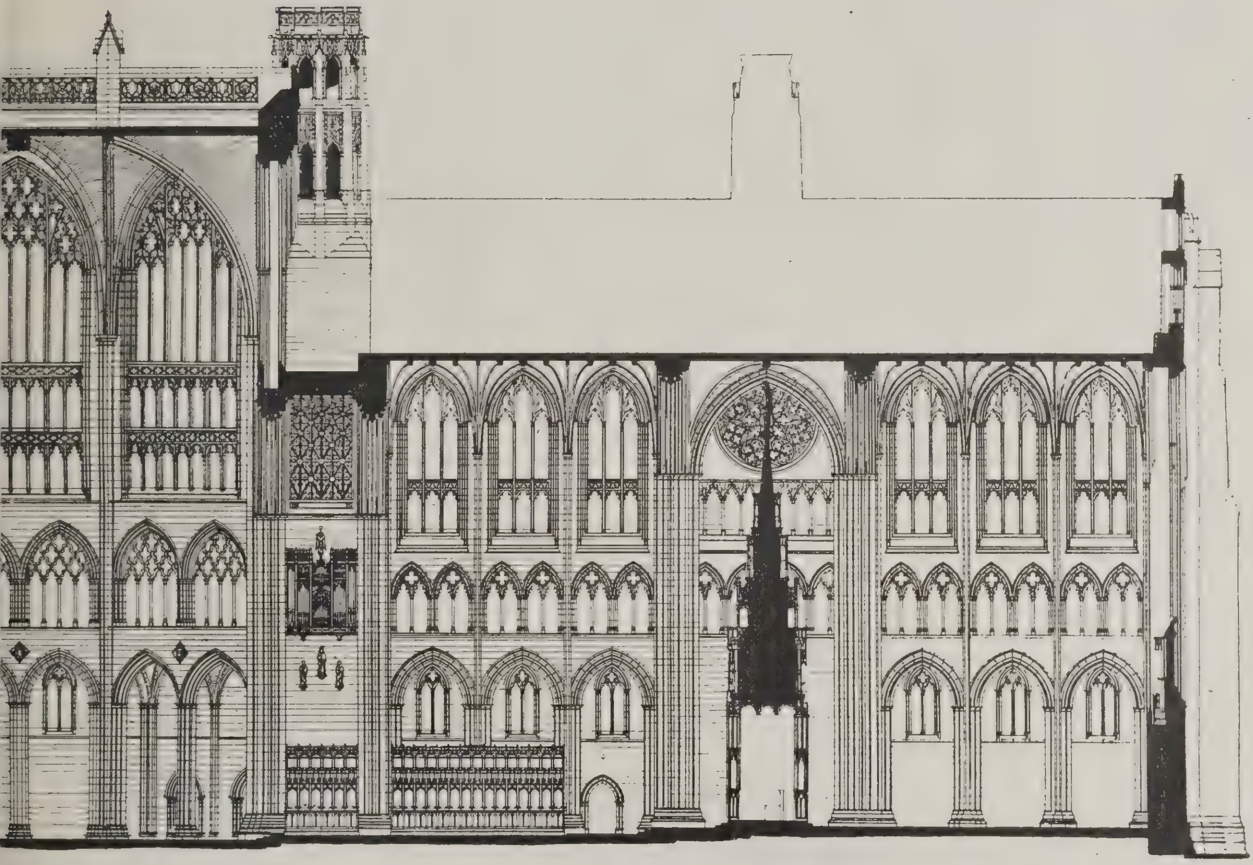

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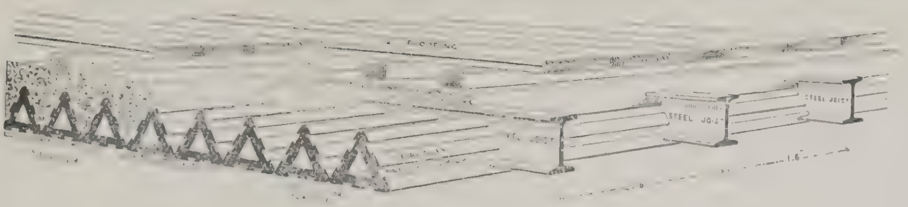
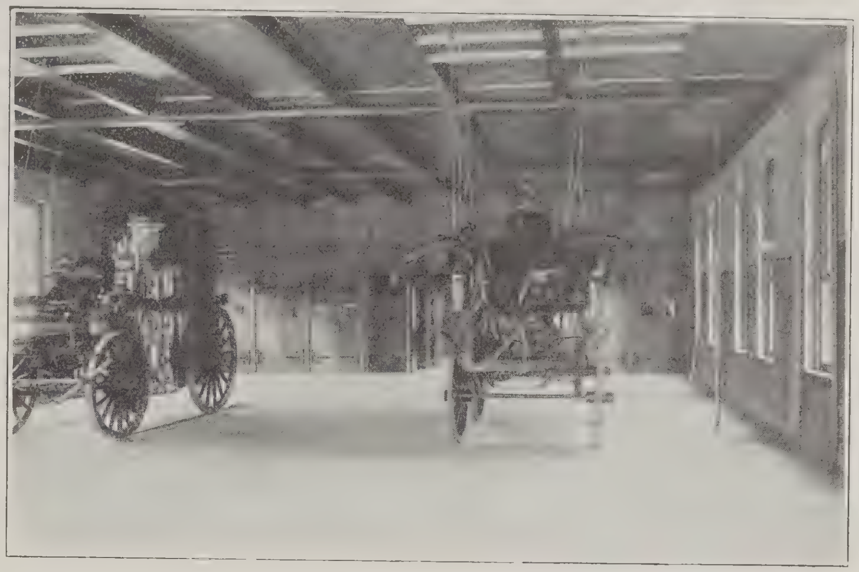


HOMAN'S FIREPROOF FLOOR.

The St. Pancras Ironwork Co., Ltd., of St. Pancras Road, London, N.W., have an attractive stall in the form of an iron stairs, from which one may examine the several photographs of work executed by this firm. With the growth of high buildings in which many persons live and work escape-staircases become a necessity, and in many important buildings these are being placed outside in positions where they are less likely to be attacked by the flames; they have, too, the advantage of being less liable to be rendered impassable by smoke, which may very possibly happen with staircases inside the building. A great number of these staircases have been erected by the St. Pancras Ironwork Co. in different parts of the kingdom; there is one, for example, on the western wall of Hyde Park Court, one of the highest buildings in London; and sixteen of them have been erected at Brook Hospital, Shooter's Hill. The firm also makes a speciality of modern stable fittings, with the stall divisions of iron; the mangers of iron or steel, enamelled inside; clean bright tiles on the walls, and the floor paved with special bricks laid to drain into iron gutters; so that everything is kept as sanitary and as fireproof as possible. Such stables as this have been carried out by the St. Pancras Ironwork Co. at Blenheim Palace, the British Embassy in Paris, and other important mansions; and it is interesting to note that the stable fittings, &c., for the fire station in the Western Gardens of the exhibition, already referred to, were selected by Lieut.-Col. Fox from this firm, who also supply safety concrete fireproof treads, iron doors for party walls, cellar-flaps, &c.



A TYPICAL AMERICAN FIRE-STATION.

The British Uralite Co., Ltd., of 50, Cannon Street, E.C., exhibit specimens of their material treated in different ways. Since its introduction into this country a few years ago Uralite has made great advances. At first, all the stock was obtained from Russia, but now the company has works of its own near Rochester, and are supplying large quantities of the material—250,000 sq. ft. of it have just been supplied to the Government for the new training college for naval cadets at Osborne. Uralite is composed of asbestos fibre cemented by silica. It is admirably fire-resisting, does not twist under heat, is unaffected to cold, damp, gases or acids, is about one-fifth the weight of iron, hardens by exposure, is vermin-proof and odourless. When used for outside work it is painted with a waterproof-paint. For roofs and walls it is particularly adapted, but the material may be employed for numerous other purposes—for instance, the encasing of safes, boilers or armoured doors; when used for armoured doors it is fixed on the wood and then sheeted with tinned steel sheets, and doors so formed have withstood over 2,300 degs. Fahr. without any marked effect beyond discoloration. Uralite is made in white, red and grey sheets, 5ft. 6in. by 3ft. and $\frac{7}{64}$in. thick, or cut as tiles to any size.

The Simplex Steel Conduit Co., Ltd., of 80, Digbeth, Birmingham, 20, Bucklersbury, London, and 1, Peel Street, Manchester, have a stall fitted with their patent conduit, showing its employment in electric wiring and the manner in which cut-outs, roses, and other fittings are attached. The tubes through which the wires pass are of enamelled and galvanized steel, and are much neater in appearance than the ordinary wood casings. They are screwed or socket-jointed and have boxes at various points for fittings. The system is altogether an up-to-date one. It is thoroughly insulated, occupies little space, and is particularly easy to inspect; repairs may be made with ease, as every part is get-at-able. All the fittings are subjected to a sand-blasting process before leaving the works, and the tubes have a smooth bore throughout, so that no abrasion of the wires can take place when erecting. In the show-cases and on the panels at the back of the stall are shown the more important of the fittings, such as bends, tees, junction, draw-in and branching boxes, also saddles, crampets and clips for erecting, together with plugs for fixing to the walls of a building. The whole stand is well lit at night time by about thirty lamps, which are controlled by one of the company's double-pole fuse and single-pole switchboards mounted in position. The accompanying illustration shows how the work is carried out.

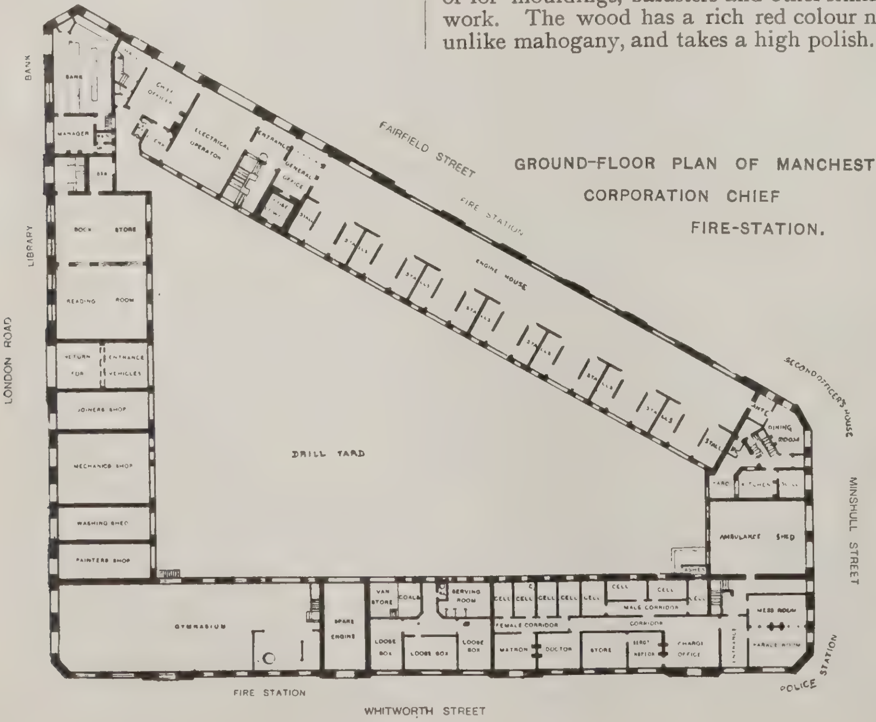
Messrs. Pilkington Brothers, Ltd., of 10, Upper Thames Street, E.C., exhibit specimens of their patent wired rolled glass; prismatic glass; polished, silvered polished, rough-cast, chequered rolled, and smoked-tinted plate glass; patent corrugated glass for iron roofs; pavement lights, &c. The wired rolled glass has wire netting embedded in it, and thus is held together under fire—it will, in fact, resist fire as long as the same thickness of iron would, while it cannot be broken by stone or other missiles. In 1899 an explosion occurred at a chemical works in St. Helen's, and though glass was shattered all over the town the roofs of Messrs. Greenall, Whitley's brewery and the Corporation Electricity Works, glazed with Pilkington's wired glass, were simply cracked, though glass in other parts of these buildings

was blown in and smashed to atoms. A particularly good feature about this glass is that, while being an efficient fire-stop, it enables any fire behind it to be seen, so that it proves of inestimable service to firemen in detecting where the fire exists. The patent prismatic rolled glass made by the firm diverts the light horizontally into the room and so illumines the parts furthest from the windows, instead of throwing the light where it is least required, that is, just below the windows. This glass can be had in sizes up to 5ft. high by 7ft. 6in. wide.

Mr. Howard R. Justice, M.I.M.E., of 55 and 56, Chancery Lane, W.C., exhibits Hayes's patent lathing. This is made of thin steel sheets stamped and punched out to form a key for the plaster, which can be used stiffer than on wood laths, and so dries sooner. Nails can be driven through without any danger of cracking the plaster. The sheets are of No. 28 gauge, measuring 72in. by 15in.; they are very light, 500 sheets weighing one ton. Hayes's patent reversible fire-resisting window is also exhibited. Frame and sashes are of galvanised iron, with wire glass and stamped chain: the window reverses for cleaning, and the sashes lock into the top and bottom when closed sharply. Some very supple steel wire scaffold ropes are also shown on the stall.

The General Electric Co., Ltd., of 71, Queen Victoria Street, E.C., have an elaborate stall embellished with beaten ironwork. The firm's patent telephonic fire-brigade alarm system is exhibited, and all kinds of switches, voltmeters, ammeters and other electrical apparatus. The Killingworth Hedges "air to earth" patent system of lightning conductors and fittings is also shown.

Millar's Karri and Jarrah Forests, Ltd., of 72, Bishopsgate Street Within, E.C., have constructed an imposing stall with their timbers, showing the construction of a fire-resisting floor. The wood has been carefully tested under fire and proved its good qualities. It can be used for heavy constructional parts or for mouldings, balusters and other similar work. The wood has a rich red colour not unlike mahogany, and takes a high polish.



GROUND-FLOOR PLAN OF MANCHESTER CORPORATION CHIEF FIRE-STATION.

Messrs. Drew-Bear, Perks & Co., Ltd., of 71A, Queen Victoria Street, E.C., exhibit some interesting models showing the steel construction of the stage at Covent Garden (illustrated in our issue for May 22nd, 1901) and of the auditorium of the King's Theatre at Hammersmith, as well as a number of photographs of other executed work. At Covent Garden the steel bridges are actuated by electric motors; they rise 9ft. above and descend 8ft. below the normal stage level. At the Hammersmith Theatre the dress circle and gallery are carried on large girders weighing upwards of 20 tons each, there being no columns. The ordinary stock of steel kept by the firm in London is capable of standing a tensile strain of 26 to 30 tons per sq. in., with an elongation of 20 per cent. in a length of 8in.; but special steel can be obtained to suit any particular requirements.

The Pearson Fire Alarm, Ltd., of 62, King William Street, E.C., show a board which has been made for their fire-alarm exchange at Birmingham. The system consists of thermostats installed wherever they may be desired in buildings and connected with the central station. By this means, when a thermostat becomes heated above 160 degs. Fahr. (or any other prearranged temperature) the electric circuit is closed and the signal given at the central station; so that means can immediately be taken to cope with the fire. This was the first automatic fire-alarm system in the Kingdom and the first to be licensed as a telegraph system by the Post Office. It is thoroughly reliable, and being worked on the "party-line" plan it enables each individual user to obtain the benefit of a central office or fire-department communication at the lowest possible rates.

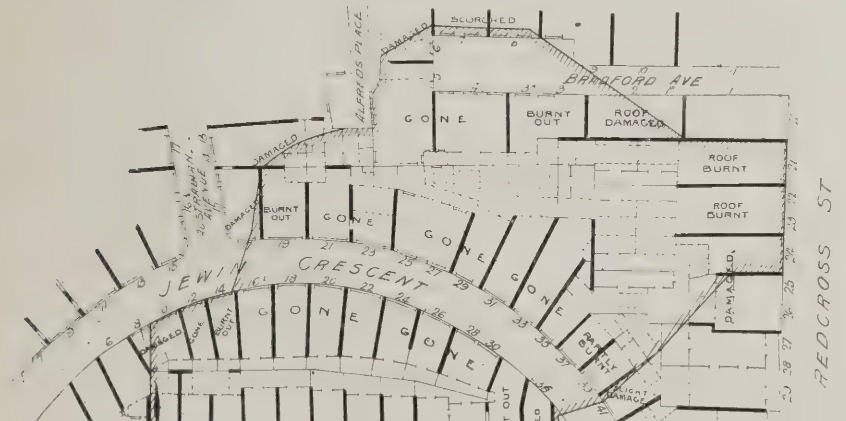
The Ratner Safe Co., Ltd., of 51, Moorgate Street, E.C. (works at Hancock Road, Bow, E.), exhibit all their varieties of safes. The patent twelve-corner-bent safes are formed out of one plate of steel, the back being riveted to the inner face of the back flange, while to the inner face of the front flange is riveted a strong bar door-frame against which the door closes; outside bands and joints, both sources of weakness against burglars, are thus avoided. To enable the safes to be bent out of the solid plate the firm has recently laid down most powerful machinery. The steel used is drill-proof, and the safes have chambers filled with an absorbent material mixed with a salt that gives off moisture under heat; chambers 4in. thick are used for the better-quality safes. Strong-room, party-wall and other doors are also made by the firm.

The Bergmann Electrical Works, of 11, Farringdon Avenue, E.C., show same cases of electrical fittings—switches and other accessories—together with some enclosed motors, ventilating fans and insulated steel conduit for electric wiring; the last can be bent cold with a special tool to almost any form desired.

Mr. Rud. A. Stoffert, 121, Bath Street, Glasgow, has an exhibit of his patent "Fram" fireproof floors and partitions, which are also manufactured by the sub-licensees—The "Fram" Fireproof Flooring Company, Manchester; Mr. Oliver C. Townsend, New Bilton, Rugby; and Messrs. G. Aston & Son, Eagle Wharf Road, London, N. The floors are formed of steel joists with arch blocks between, and can be used at once, the soffit being left open or covered by plaster boards, or finished in any other way. Wooden flooring can be nailed on to the blocks, which can also be sawn without crumbling.

Messrs. J. H. Heathman & Co., of 72, Rectory Road, Parson's Green, S.W., exhibit a very large number of fire escapes and ladders of all sorts. The firm's patent telescopic ladder tower is made in various sizes, with platforms rising to 55ft.; the gearing is simple and efficient, and the wooden framework well braced. The sliding sections can be locked at any height, and when fully extended are quite rigid. They are mounted on wheels and close down to a small compass. These ladders have been supplied to the Russian Palace at Novorossisk, to the Manchester, Liverpool and Aberdeen railway stations, the India Office, Drury Lane Theatre, Brompton Oratory, and numerous hospitals, art galleries and hotels throughout the country.

EDINBURGH CHIEF FIRE-STATION.



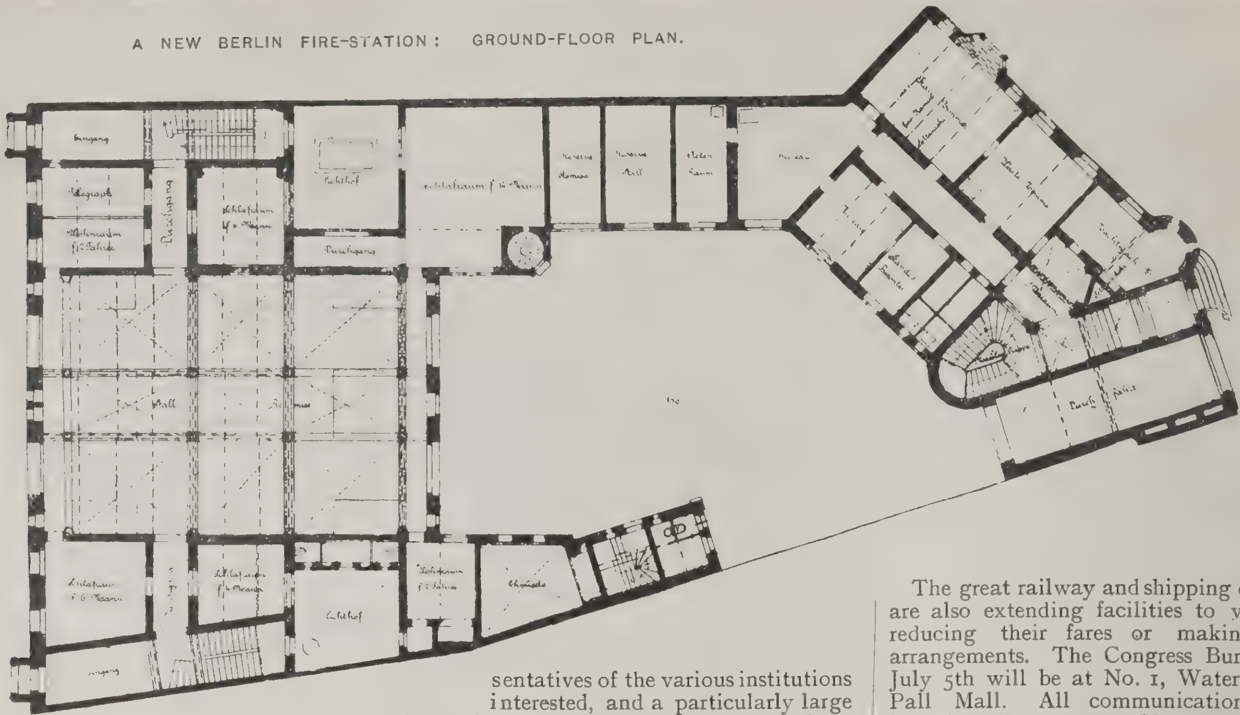
THE CRIPPLEGATE FIRE, NOVEMBER 19TH, 1897.
FROM AN INSURANCE PLAN OF LONDON BY CHARLES E. GOAD.

Among other exhibitors in this gallery of the Queen's Court are the following:—The Patent Impervious Stone Co., of Rutland Wharf, Hammersmith, who show two stone stairs; the Eavis Fireproof Materials Co., of Manor Works, Stamford Terrace, Stoke Newington, N., makers of fireproof interlocking wall-plates with helical vertical channels for cement grouting, fibrous and other plaster slabs, "Asbestolite" sheets, &c.; Mr. William Miller, of 212, St. Vincent Street, Glasgow, and other firms, who show the patent chemical fire extinguishers of which they are the patentees and makers; Mr. Jabez Thompson, of Northwich, who exhibits his patent "Brickwood" blocks, fireproof, soundproof and only half the weight of ordinary bricks; the Shepwood Co., of Lindisfarne, Walton-on-Thames, who show specimens of their patent "Shepwood" partition bricks with cavities running vertically through them (a partition finishing 2½in. thick being as rigid as an ordinary 4½in. wall); Messrs. Gourmet & Co., of Mount Pleasant, London, W.C., who show the "Sootene" fire extinguisher, a dry powder which robs the air of its oxygen, especially suited for oil and similar fires, where water is worse than useless; and Messrs. P. Hensel & Co., of 12, Long Lane, E.C., who show their "National" fire-alarm system and thermostatic temperature-controlling apparatus for industrial and other purposes.

The main hall of the Queen's Court is almost exclusively devoted to German exhibits. We have already noticed those of the Berlin and other official authorities; but in addition there are also many trade exhibits. The "Terrast" Baugesellschaft, m.b.H., of Karlsbad, Berlin, W. 15 (London agent, Mr. Frederick Rings, architect and surveyor, 42, St. Filland's Road, Catford), exhibit their system of flooring, consisting of wire netting spread sagged over the joists and filled in with concrete, and also an imitation of marble called "Terramor." The "Terrace" system of building hospitals, sanatoria, &c., is shown by some models, the several floors being formed one below the other in steps with promenades for patients. Examples of concrete work are exhibited by various other firms, fire-extinguishers, hydrants, the Schapler-Fries pneumatic tower escape which can be extended 83ft. in forty seconds, and a material called "Lapidon" in close imitation of wood.

On July 6th the International Fire Prevention Congress will be opened at Earl's

A NEW BERLIN FIRE-STATION: GROUND-FLOOR PLAN.

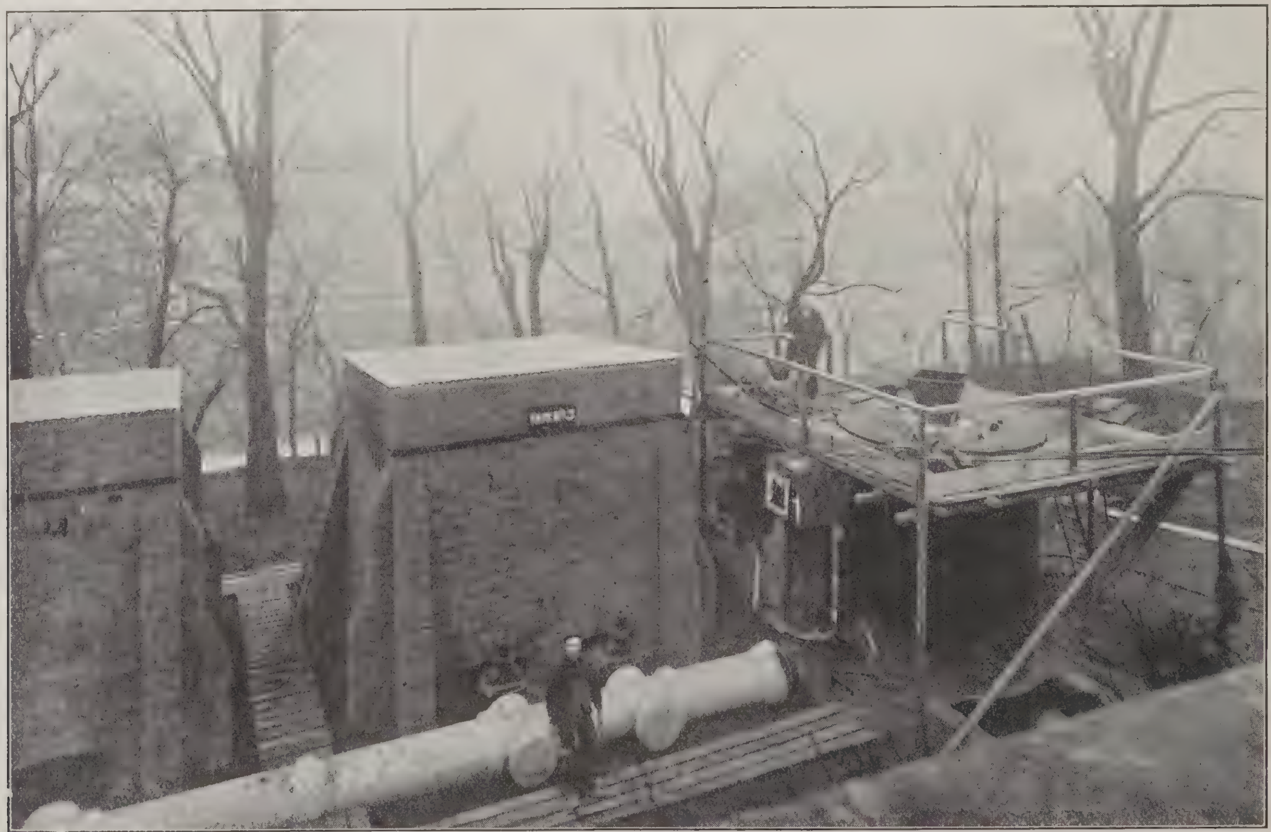


Court, and from July 9th to 18th the National Fire-Brigades' Union will hold a series of competitions in the grounds.

The Congress will be attended by six special delegates from our leading Government departments, also by six representatives of the City of London, three from the Metropolitan Asylums Board, four from the London Chamber of Commerce, and quite a number from the other local authorities and institutions. Nearly all the leading provincial municipalities—numbering over eighty—have also decided to be officially represented on this occasion, and the German, French, Italian, Hungarian, Belgian and other Continental Governments have intimated their intention of sending delegates, as have also a number of leading foreign municipalities. Australia, Canada and India will send representatives of the various institutions interested, and a particularly large deputation of engineers is coming over from the United States. The Congress being essentially a technical one dealing with the "prevention" of fire by better construction and equipment by legislation and other precautionary measures, the membership comprises mainly public officials, architects, engineers and fire-brigade officers, but the insurance interests will also be represented, as also the universities and other teaching bodies. Special courtesies have been accorded to members of the Congress during their stay in London, inasmuch as the Duke of Sutherland, the Duke of Wellington and others have thrown open their private galleries; whilst the Speaker of the House of Commons, the Master of the Mint, the Secretary of the General Post-Office and other public officials are according various facilities

The great railway and shipping companies are also extending facilities to visitors by reducing their fares or making special arrangements. The Congress Bureau up to July 5th will be at No. 1, Waterloo Place, Pall Mall. All communications should be addressed to the general hon. secretary of the British Fire Prevention Committee, and not to individuals or sectional hon. secretaries.

In regard to the London Fire Service, it is noteworthy that for some considerable time past the men under instruction at Southwark Bridge Road, the headquarters of the brigade, have been engaged in perfecting themselves in a new "hook and ladder" drill, which is quite unique as far as the present system of the force is concerned. The men are being trained to ascend lofty buildings by means of hook ladders used in conjunction with the ordinary long ladders, and the new methods present important possibilities in the work of rescue from burning buildings. The hooked ladders are termed "emergency ladders," and are now carried on every horsed escape in London.



TESTING HUTS OF THE BRITISH FIRE PREVENTION COMMITTEE AT WESTBOURNE PARK, LONDON, W.

Builders' Notes.

Mr. Henry R. Rons, builder, of Grays, died recently.

The Dispute in the Tyne District between the house-building employers and joiners has been settled. The employers have withdrawn their notice for 1d. per hour reduction in wages and alteration in rules.

A Building Trade Walking Match.—A walk from Horsham to Henfield and back, a distance of twenty-three miles, by competitors exclusively engaged in the Horsham building trade as masters, surveyors, managers, foremen, clerks or mechanics, took place on Whit Monday, a start being made from the Carfax. The winner was Mr. J. Garman.

The death is announced of Mr. Thomas Heap, a prominent Blackpool builder. He was seventy years of age. Mr. Heap, who was born at Bradford, went to Blackpool about seventeen or eighteen years ago. He had undertaken many big works in connection with the development of streets and the building of property. He was also an agent for all kinds of building materials.

Presentation to a Masonry Instructor.—The members of the masons' class at the Battersea Polytechnic recently presented an illuminated address to Mr. John Wornell (who is now retiring) as a token of their gratitude and appreciation of his kindness and generosity to them during the six years he has performed the task of teaching practical masonry. The principal, Mr. Sidney H. Wells, made the presentation.

Building Operations in Nottingham have increased largely during the past four years. In the year ending March 31st, 1900, the number of plans for new buildings passed was 1,768. During the twelve months just ended the number was 2,775—over a thousand more in the year and 1,377 more than in 1901. Building sites have been snapped up on every hand, and on the edge of the city houses have also sprung up rapidly in some districts.

Messrs. Morrison, Ingram & Co., Ltd., of Manchester, have supplied the whole of the lavatories at the New Midland Hotel, Manchester. They also supplied a considerable quantity of the cast-iron conduits for the electrical work in the corridors. The lavatories mark a new departure in good hotel lavatory work. Hitherto it has been the custom to fix marble top lavatories, involving troublesome fixing and massive effect. In the visitors' lavatories in the Midland Hotel an attempt has been made to obtain a light and graceful appearance with ample strength and the maximum of sanitary efficiency, together with simplicity in the fittings and easy accessibility. The style is Louis XV., and the basins are tinted porcelain, with white metal fittings. In ranges, space is afforded between each basin for cleansing. The supply and vent pipes are in copper, nickel-plated, while the supporting frieze is in mahogany Chippendale polished, with metal legs to match.

The Building Trade in Johannesburg seems to be in a prosperous state. Amongst the many new business buildings either projected or in course of construction are:—The Bank of Natal, cost £30,000; Harvey, Greenacre, Rissik Street, between Market Square and Pritchard Street, cost £40,000; Walter Block, Eloff Street, between Bree and Jeppe Streets, cost £40,000; and the new theatre, nearly opposite the Walter Block, cost £65,000 to £70,000. Messrs. McIntosh & Moffat are the architects for all of the above. The home of the New Catholic Club, at the corner of Nugget and Jeppe Streets, is now in course of construction, and work upon it has been proceeding rapidly. The building is described as of the Classic Romanesque style of architecture, and three storeys high, of cement and brick. The estimated cost is £15,000, and Mr. J. F. Beardwood is the architect, who also designed the Catholic Club in Pretoria. A Y.M.C.A. building is to be erected at the corner of Bree and Joubert Streets, at a cost of about £40,000. Messrs. Leek & Emily are the architects. The Johannesburg Town Council has adopted the waterborne system of sewage. A beginning is to be made with the northern part of the town. It has also been decided to introduce a storm-water drainage, which will effect a great saving in preventing the destruction of roads.

Labour Troubles in New York.—Building operations all over New York are nearly at a standstill owing to the labour conflict. The trouble has assumed large proportions At the beginning of May it was hoped that by common agreement disputes would be avoided, allowing the building boom, which has lasted now for three or four years, to work itself out in a natural way. Demands for an increase of wages were willingly conceded in many branches of the building trades, and the scale of pay all round is higher than it has ever been. But regardless of the signs that the period of extreme prosperity is reaching its limit, the trade unions have sought to impose upon the contractors and master-builders harassing sets of union rules. The builders organized themselves into a general federation to protect their rights and interests. The idea took a national form, and as the outcome of a great meeting of employers a National Federation of Employers will probably be formed as a counterpoise to the American Federation of Labour, which claims to control 2,000,000 working men. From every city and town of importance east of the Mississippi have come applications for admission to the federation and offers of support. The promoters declare that they are not fighting the unions as unions, nor is it a question of wages or hours of labour. It is rather a question of industrial independence. On his return to town one big contractor with many sky-scrapers and tenement houses of the better kind on his hands was confronted by a set of new demands from the plasterers' union. Not only did the plasterers ask for their daily wage to be raised from 3¼ dollars to 4 dollars (13s. to 16s.), but they also insisted that the employers should furnish them with the implements of their work, and that all the plaster and mortar should be union made. Similarly the stone cutters want all helpers and drivers to be union men; the painters require all employees of the shops where their materials come from to be members of a union; while the architectural iron workers threaten to refuse to handle material not delivered by union men. Some idea of the fairness of the wages paid to the workers may be gathered from the fact that even the Italian "rockmen and excavators," who to the number of 4,500 have struck on the subway railroad, admit that they have made enough money to stay out six months if necessary—and this though rents have gone up, cabbages have risen from 3 to 10 cents (5d.) and a pint of beer costs a man 15 cents (7½d.). However, though these strikers defiantly rejected the counsel of their own leader and the Central Federated Union, with which they were affiliated, to accept the proposition for arbitration of the chief contractor of the subway, Mr John B. McDonald, the influx of independent labour has been too strong for them. Every week sees thousands of immigrants, and work on the subway is being continued with little fear of its being prolonged beyond contract time. So much violence was threatened by these compact bodies of Italian labourers that, for the first time in several years, every man in the police force was ordered to hold himself in readiness to turn out on an emergency. The back of this particular strike is broken. Meanwhile the originators of the building trades' strike, the teamsters, have returned to work owing to common concessions. There were about four thousand of these men, and their stoppage made idle a hundred thousand engaged in building.

Current Market Prices.

FORAGE.

		£	s.	d.	£	s.	d
Beans	per qr.	1	9	9	1	12	3
Clover, best	per load	4	7	6	4	15	0
Hay, best	do.	3	15	0	5	10	0
Sainfoin mixture ..	do.	3	15	0	4	5	0
Straw	do.	1	8	0	1	18	0

OILS AND PAINTS.

		£	s.	d.	£	s.	d
Castor Oil, French ..	per cwt.	1	1	10	1	2	2
Colza Oil, English ..	do.	1	4	3		—	
Copperas	per ton	2	2	6		—	
Lard Oil	per cwt.	2	15	0	2	17	0
Lead, white, ground, carbonate	do.	1	4	10	—		
Do. red	do.	1	0	4½			
Linseed Oil, barrels ..	do.	1	3	9		—	
Petroleum, American ..	per gal.	0	0	5⅝	0	0	5¾
Do. Russian .	do.	0	0	4⅛	0	0	4¼
Pitch	per barrel	0	8	0		—	
Shellac, orange	per cwt.	6	6	0		—	
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Home Melt ..	per cwt.	1	9	0			
Tar, Stockholm	per barrel	1	1	6		—	
Turpentine	per cwt.	1	19	0		—	

METALS.

		£	s.	d.	£	s.	d
Copper, sheet, strong ..	per ton	75	0	0		—	
Iron, Staffs., bar.. ..	do.	6	5	0	8	10	0
Do. Galvanised Corrugated sheet ..	do.	11	0	0	11	5	0
Lead, pig, Soft Foreign..	do.	11	10	0	11	11	3
Do. do. English common brands.. ..	do.	11	15	0	11	17	6
Do. sheet, English 3lb. per sq. ft and upwards ..	do.	14	10	0		—	
Do. pipe	do.	15	0	0		—	
Nails, cut clasp, 3in to 6in.	do.	9	5	0		—	
Do. floor brads ..	do.	9	0	0		—	
Steel, Staffs., Girders and Angles	do.	5	15	0	6	7	6
Do. do. Mild bars ..	do.	6	12	6	7	7	6
Tin, Foreign	do.	127	10	0	128	0	0
Do. English ingots ..	do.	130	0	0	130	10	0
Zinc, sheets, Silesian ..	do	26	0	0		—	
Do. do. Vieille Montaigne	do.	26	5	0		—	
Do. Spelter	do.	21	2	6	21	5	0

TIMBER.

SOFT WOODS.

		£	s.	d.	£	s.	d
Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow ..	do.	5	5	0	6	5	0
Do. Pitch	do.	3	0	0	3	4	0
Laths, log, Dantzic ..	per fath.	4	10	0	5	10	0
Do. Petersburg ..	do.	7	5	0		—	
Deals, Kovda, 3rd Yell. 3×9	do.	13	10	0		—	
Do. Mesane, 4th Yellow, 2×9	do.	10	5	0		—	
Do. do. do. 3×9	do.	9	5	0		—	
Do. Orreiors, 1st Yellow, 3×9	do.	11	10	0		—	
Do. Söderhamn inferior 5th Yellow, 3×9	do.	7	15	0		—	
Do. Raumo, 1st and 2nd Yellow, 2½×7	do.	9	10	0		—	
Do. Luleå, 1st Yellow, dry, 2½×7	do.	10	0	0		—	
Do. Galatz, 1st and 2nd White, 3×9×13ft.	do.	8	15	0	9	5	0
Do. Riga, White .. 3×11	do.	6	10	0		—	
Do. Archangel, White, 2nd 3×11	do.	12	7	6		—	
Do. do. do. 3×9	do.	11	5	0		—	
Do. do. 3rd, 3×11	do.	9	15	0		—	
Do. do. do. 3×9	do.	8	17	6		—	
Do. Haroldsby (Abo), unsorted Yellow, 3×8	do.	7	15	0		—	
Do. do. do. do 2½×7	do.	9	15	0			
Do. Grindstone Island, 1st, 2nd and 3rd White Spruce .. 3×9	do.	8	5	0		—	
Do. St. Johns, 1st, 2nd and 3rd unsorted bright Spruce, 3×11	do.	8	0	0		—	
Do. do. do. do. 3×9	do.	8	0	0		—	
Do. do. 1st, 2nd and 3rd White Spruce, 3×7	do.	7	10	0		—	
Do. Montreal, 4th Bright Yellow Pine— 3×11×16ft.	do.	10	5	0		—	
Do. Quebec, unsorted Red Pine, 3×9	do.	9	15	0		—	
3×7	do.	8	10	0		—	
Battens, all kinds ..	do.	6	10	0	12	0	0
Flooring Boards 1in. prepared, 1st	per square	0	9	3	0	12	6
Do. 2nd	do.	0	8	9	0	10	0
Do. 3rd &c.	do.	0	8	0	0	9	3

HARD WOODS.

		£	s.	d.	£	s.	d
Ash, Quebec	per load	3	12	6		—	
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	15	0	0	20	0	0
Cedar Cuba	per ft. sup.	0	0	5¼		—	
Do. Honduras ..	do.	0	0	$5\frac{31}{32}$		—	
Do. Tobasco	do.	0	0	$4\frac{21}{32}$		—	
Elm. Quebec	per load	4	0	0		—	
Mahogany, Average Price for Cargo, Honduras ..	per ft. sup.	0	0	5⅞		—	
Do. African ..	do.	0	0	$4\frac{11}{32}$		—	
Do. St. Domingo	do.	0	0	$3\frac{29}{32}$		—	

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver.]

During the week ending June 6th six failures in the building and timber trades in England and Wales were gazetted.

H. C. Nunn, builder, Cherryhinton. P.E., Cambridge Guildhall, June 17th, at 11.

F. A. Chatfield, builder, Stapleford. P.E., Derby C.C., June 16th, at 11.

W. Parkinson, builder, Southend-on-Sea. P.E., Chelmsford Shirehall, July 1st, at 10.

G. R. Smith, builder and joinery manufacturer, Abertillery. P.E., Tredegar C.C., July 10th, at 10 30.

G. Versey, sanitary engineer, South Lowestoft. R.O. May 28th.

G. H. Stoker, joiner and builder, Calton. R.O. May 25th. P.E., York Courts of Justice, July 3rd, at 11.

O. G. Pritchard, joiner and contractor, Liscard. First meeting, O.R.'s, Liverpool, June 17th, at 12. P.E., Birkenhead C.C., August 19th, at 11.

C. H. Jacobsen, builder, Enfield. First meeting, 8, Temple Chambers, E.C., June 10th, at 12. P.E., Edmonton C.C., June 22nd, at 11.30.

E. H. Williams, builder, Aberystwyth. First meeting, Town Hall, Aberystwyth, June 16th, at 11. P.E., Aberystwyth Town Hall, June 16th, at 10.30.

J. W. Groves, builder, Sutton Scotney. First meeting, O.R.'s, Southampton, June 10th, at 3. P.E., Winchester Castle, June 15th. at 11.

Westerdale Paint and Varnish Co., paint, colour and varnish merchants, Leicester. R.O. May 26th. First meeting, O.R.'s, Leicester, June 12th, at 12. P.E., Leicester, The Castle, June 19th, at 11.

The following companies are to be wound up:—

Welbs Worcester Tileries Co., Ltd., Worcester.

Eye Fletton Brick Co., Ltd. R. Stray, liquidator.

Silvertown, Canning Town and Victoria Dock Freehold Land and Building Co., Ltd.

Escoline Sanitary Pottery Co., Ltd. P. H. Pope, liquidator.

Grane Brick & Stone Co., Ltd. J. Whittaker & H. Taylor, liquidators.

Tynewydd Brickworks Co., Ltd. F. Gittens, liquidator.

Lodge Brick and Tile Co., Ltd. C. E. Bullock, Hanley, liquidator.

British and Colonial Transformable and Transportable Building Co., Ltd. A. E. Tilley, liquidator.

Coming Events.

Wednesday, June 10.

Institute of Sanitary Engineers, Ltd.—Meetings of General Purposes and Finance Committee at 4.15 p m, Election Committee at 5.15 p.m., and half-yearly General Meeting at 7 p.m.

Society of Biblical Archæology.—Meeting at 4.30 p.m.

Institute of Builders.—Meeting at Society of Arts. Dr. Hubert Higgins on "The Seasoning and Preservation of Wood," 8 p.m.

Institution of Gas Engineers.—Annual General Meeting at Institution of Mechanical Engineers, Storey's Gate, S.W., 10 a.m. Second Day.

Thursday, June 11.

Society of Antiquaries of London.—Meeting at 8.30 p.m.

Institute of Gas Engineers.—Annual General Meeting at 10 a.m. Third and concluding day.

South-Eastern Union of Scientific Societies.—Annual Congress at Town Hall, Dover. Annual Address by Sir H. H. Howorth, president-elect 8 p.m.

Society for the Encouragement of the Fine Arts.—Mr. Joseph Offord on "A Forgotten People: the Hittites."

Friday, June 12.

South-Eastern Union of Scientific Societies.—Annual Congress. Second Day. Rev. R. Ashington Bullen on "A Late Keltic Cemetery at Harlyn Bay," 12 p.m.

Saturday, June 13.

Edinburgh Architectural Association.—Annual excursion to Bamborough Castle and Church.

Architectural Association.—First Summer Visit to Heathfield Park, Sussex. Train leaves Victoria Station at 11.15 a.m.

Building Trades' Exhibition, Royal Agricultural Hall, Islington, N.—Opens at 1.30 p.m

Incorporated Association of Municipal and County Engineers.—Eastern District Meeting at Sudbury.

South-Eastern Union of Scientific Societies.—Congress at Dover. Mr. A. T. Walmisley, engineer, Dover Harbour Board, on "International Communication," 12 p.m.

Tuesday, June 16.

Institution of Civil Engineers ("James Forrest" Lecture).—Mr. W. H. Maw on "Some Unsolved Problems in Engineering," 9 p.m.

Wednesday, June 17.

Chemical Society.—Meeting at 5 30 p.m.

Institution of Civil Engineers.—Mr. John Clarkes Hawkshaw, president, will inaugurate the Engineering Conference with a short address.

Trade and Craft.

Ventilators.

The catalogue issued by Messrs. F. W. Barker & Co., of 12, Earl Street, Westminster, shows a large number of ventilators, extracting cowls, air-bricks, gratings, regulating valves for flues, &c. The firm's patent automatic ventilator consists of a central shaft surrounded by four extracting chambers (each having an exhaust opening from top to bottom) and facing four curved outer plates which form the outside of the ventilator. As the extracting outlets are shut off from one another the action of each is entirely independent and cannot be neutralized by air entering from another opening; so that there are really four ventilators in one. The cap is formed to entirely keep out rain or snow, and the base is made from one piece of metal, thus being very rigid. These ventilators have been used all over the Kingdom.

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Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, Builders' Journal, 9, *East Harding Street, E.C.*

Bridlington.—For the erection of the following buildings: (Contract No. VIII.) engine-room, boiler-house, boiler settings, chimney shaft and offices, for the Corporation. Mr. Ernest R. Matthews, C.E., F.G.S., borough surveyor:—

O. Atkinson, Harrogate	£8,553	0	0
Jarem & Son, Scarborough	6,775	15	0
J. Gould, Ltd., Hunslet	6,467	13	1
E. Good & Sons, Hull	6,418	8	8
Booth	5,893	0	0
R. Musk	5,792	10	5
Sampson & Siddall	5,680	0	0
J. Sawdon	5,398	0	0
J. H. Hudson	5,310	0	0
G. Storr & Sons*	5,238	0	0
Sprakes & Sons, Doncaster	5,100	0	0

* Accepted.

Cardiff.—For rebuilding premises, St. Mary Street, Cardiff, and making alterations to the existing "South Wales Daily News" Offices, for Messrs. D. Duncan & Sons. Mr. S. Rooney, architect, Cardiff:—

J. Lathey & Co.	£8,167	0	0
C. E. Beams & Nephew	7,840	0	0
A. W. Cadwallader	7,700	0	0
D. Davies	7,700	0	0
E. R. Evans Brothers	7,690	0	0
E. Turner & Sons	7,338	0	0
J. Allan & Son	7,304	3	3
W. Thomas & Co.	7,272	0	0
W. T. Morgan	7,177	0	0
W. Simmonds & Co.*	7,100	0	0
J. Britton, Dinas Powis	7,030	0	0

* Accepted. [Rest of Cardiff.]

Carnarvon.—For making alterations and additions to the Metropolitan Bank, Bangor Street, Carnarvon. Mr. Rowland Lloyd Jones, architect, 4, Market Street, Carnarvon:—

E. Jones & Son, Plas Dolydd, Groeslon, R.S.O.	£1,700	0
R. Jones, Twrog Mills, Llanwnda	1,478	0
Williams & Roberts,* Shirehall Street, Carnarvon	1,384	0
G. Roberts & Brothers, Llandudno	1,368	7

* Accepted.

Cockerton (near Darlington).—For the erection of sixteen houses at Cockerton, for Mr. A. Hunt. Mr. W. Hargreaves Bourne, A.R.I.B.A., architect, Darlington:—

R. Hodgson & Sons, Hurworth	£4,644	12	9
W. A. Cowan, Stockton on-Tees	4,527	0	4
J. W. & M. Mackenzie, Darlington	4,270	0	0
F. Shepherd, York	4,116	10	0
R. Blackett & Son, Darlington	4,014	0	0
T. Boyd & Sons, Stapleton	3,986	19	10
J. & J. Airey,* Darlington	3,840	0	0

* Accepted provisionally subject to modification.

Croydon.—For the erection of a house proposed to be built in St. Peters' Road, Croydon. Mr. Frank Windsor, architect, 1, High Street, Croydon:—

J. R. Bex	£1,115
J. Horrocks	975
E. J. Saunders	873
D. Waller*	810

* Accepted.

Durham.—For the construction of 2,206 lineal yards of 12in., 9in., 8in. and 6in. pipe sewers with manholes, lampholes, flushing chambers and shafts, and ventilating shafts in connection therewith; the construction of sewage tanks, bacteria beds, and stone water-filter, and the laying-out and fencing of 4½ acres of land for sewage-disposal purposes at Carrville, in the parish of Belmont, for the Durham Rural District Council. Mr. George Gregson, surveyor:—

Hardy & Atkinson, West Hartlepool	£4,419	2	9
R. Oliver, Gilesgate Moor	4,200	0	0
G. T. Manners, Durham	4,198	0	0
G. Bell, South Shields	4,013	0	0
J. G. Bradley, Durham	3,335	17	6
J. Carrick,* Durham	3,032	1	4

* Accepted.

Heacham, Norfolk.—For the erection of a P.M. Church, Heacham, Norfolk. Mr. F. Burdett Ward, architect, 7, York Row, Wisbech, and at 4, the Crescent, Spalding:—

J. Guttridge, Peterborough	£715	10
J. J. Bone, Lynn	640	0
A. F. Foreman, Lynn	588	10
J. Medwell, Lynn	570	0
R. Dye, Lynn	565	0
Bardell Brothers, Lynn	544	0
J. J. Nourse, Heacham	527	0
E. Girling & Co., Wisbech	526	0
Nelston & Co., Hunstanton	525	10
F. J. Geddings, St. Ives	508	10
R. Shanks,* Chatteris	498	0

* Accepted.

Llanbedr (Wales).—For the erection of a new residence at Llanbedr, for Mr. William Jones, Llymgwyn, Chwilog. Mr. R. L. Jones, architect, Carnarvon:—

J. T. Jones & Co., Abererch	£1,903	0
Jones, Roberts & Jones, Pwllheli	1,898	0
D. J. Pierce, Llanllyfni	1,850	0
J. Pierce,* Pencaenewydd	1,800	0
G. Williams, Portmadoc	1,773	0
D. Evans, Criccieth	1,675	0
Jones & Davies, Barmouth	1,669	12
J. Morgan, Barmouth, and E. Williams, Harlech	1,654	0
J. Adams, Barmouth	1,634	0
E. Williams & Co., Llanbedr	1,629	0
Edward Brothers, Barmouth	1,600	0
L. Williams & Sons, Barmouth	1,598	0
W. G. Evans, Criccieth	1,532	0

* Accepted.

London.—For sanitary works at Upper Kennington Lane School, for the London School Board. Mr. T. J. Bailey, Board's architect:—

G. Parker	£1,821	J. W. Falkner & Sons	£1,583
J. F. Ford	1,719	W. Hammond	1,577
Johnson & Co.	1,623	Lathey Brothers	1,525
Rice & Son	1,607	J. Peattie*	1,418
Maxwell Brothers, Ltd.	1,593		

* Recommended for acceptance.

London.—For the erection of a senior mixed school, Offord Road, Barnsbury, for the London School Board. Mr. T. J. Bailey, Board's architect:—

G. S. S. Williams & Son	£12,725	0
C. Miskin & Sons	12,061	0
T. L. Green	12,027	0
W. Gregar & Son	11,856	0
J. Grover & Son	11,761	0
W. M. Dabbs & Son	11,672	0
A. Porter	11,428	0
E. Lawrance & Sons	11,177	0
C. Dearing & Son	11,097	14
Treasure & Son	11,089	0
McCormick & Sons	11,068	0
J. & M. Patrick	11,010	0
Patman & Fotheringham, Ltd.*	10,796	0

* Recommended for acceptance.

London.—For the erection of graded school of three storeys at Blakesley, Stepney, for the London School Boar. Mr. T. J. Bailey, Board's architect:—

F. & F. J. Wood	£22,601	0
W. Downs	22,525	0
G. E. Wallis & Son	22,294	0
G. S. S. Williams & Son	22,270	0
G. Munday & Sons	22,262	0
Perry & Co.	22,224	0
J. Grover & Son	22,181	0
J. & M. Patrick	21,960	0
C. Dearing & Son	21,908	12
W. Gregar & Son	21,820	0
J. Appleby & Sons	21,810	0
J. & C. Bowyer	21,775	0
E. Lawrance & Sons	21,390	0
Treasure & Son*	21,278	0

* Recommended for acceptance.

London.—For the erection of a graded and higher-grade schools, Myrdle Street, Stepney, for the London School Board. Mr. T. J. Bailey, Board's architect:—

Lathey Brothers	£32,100	J. Smith & Sons, Ltd.	£29,891
W. Downs	31,327	W. Gregor & Son	29,820
Clarke & Bracey	31,265	J. & M. Patrick	29,634
G. S. S. Williams & Son	31,185	E. Lawrance & Sons	29,480
McCormick & Son.	30,990	G. E. Wallis & Sons	29,387
A. Porter	30,931	Treasure & Son	29,124
J. Grover & Son	30,918	J. Garrett & Son*	29,031
F. & F. J. Wood	30,785		

* Recommended for acceptance.

London.—For the erection of a school, New King's Road, Fulham, for the London School Board. Mr. T. J. Bailey, Board's architect:—

Holloway Brothers, Ltd.	£25 025	Leslie & Co., Ltd.	£23,531
McCormick & Son	24,987	E. Lawrance & Sons	23,468
C. F. Kearley	24,822	J. Marsland & Sons	23,405
J. Carmichael	24,816	Lathey Brothers	23,250
Spencer, Santo & Co., Ltd.	24,192	Treasure & Son	22,849
W. Smith & Son	23,953	W. King & Son	22,738
J. Garret & Son	23,698	Martin, Wells & Co., Ltd.	22,362
J. Allen & Sons, Ltd.	23,659	J. & M. Patrick*	21,271

* Recommended for acceptance.

London.—For sanitary works, &c., at Waldron Road School, Lower Tooting, for the London School Board. Mr. T. J. Bailey, Board's architect:—

J. W. Falkner & Sons	£2,083	W. Johnson & Co, Ltd.	£1,898
E. Triggs	2,027	Rice & Son	1,879
J. & M. Patrick	1,992	Lathey Brothers*	1,859
H. Leney & Son	1,949		
R. P. Beattie	1,925		

* Recommended for acceptance.

London, S.W.—For the erection of a higher-grade school, Childerley Street, Fulham, for the London School Board. Mr. T. J. Bailey, Board's architect:—

C. Miskin & Sons	£19,065
Killby & Gayford	18,930
F. Gough & Co.	18,770
J. Allen & Sons, Ltd.	18,616
Holloway Brothers, Ltd.	18,486
E. Lawrance & Sons	17,786
W. King & Son	17,710
Lathey Brothers	17,644
Leslie & Co, Ltd.	17,564
Patman & Fotheringham, Ltd.	17,472
Treasure & Son	17,419
Martin, Wells & Co., Ltd.	17,363
Spencer, Santo & Co., Ltd.	17,334
Stimpson & Co.	17,150
J. Carmichael	16,884
W. Johnson & Co., Ltd.*	16,580
J. & M. Patrick	16,234

* Recommended for acceptance.

Manor Park.—For the erection of a sorting office at Manor Park, for H.M. Office of Works, &c. Mr. T. J. Bailey, Board's architect:—

J. F. Holliday	£2,280	0
A. T. Haines & Co.	2,000	0
E. S. Hammerton	1,994	11
A. J. Sheffield	1,987	0
Braid, Pater & Co.	1,968	0
T. Bruty	1,838	0
F. Bull	1,832	0
J. W. Jerram	1,798	0
W. H. Lorden & Son	1,777	0
J. A. Reed	1,760	0
Foster Brothers	1,727	0
H. Wall & Co.	1,709	0
J. Shelborne & Co.	1,683	0
E. West	1,669	0
Edwards & Medway	1,660	0
L. J. Lamplough	1,659	0
A. E. Symes	1,622	0
W. Lawrence & Son	1,504	0
H. C. Horswill	1,580	0
F. Willmott*	1,447	0

* Accepted.

Neath (Wales).—For proposed hall, High Street, Neath, for the Presbyterian Church of Wales. Messrs. Habershon, Fawckner & Groves, architects, 14, Pearl Street, Cardiff:—

W. H. Creighton, Neath	£4 468	14	0
D. Davies, Cardiff	3,890	0	0
D. Thomas & Son, Cardiff	3,393	0	0
G. Davies, Swansea	3,363	8	4
J. Goodridge & Sons, Neath	3,155	0	0
Bennett Brothers,* Swansea	3,149	10	7

* Accepted.

Pleasley (near Mansfield).—For the erection and completion of new mixed and infant school at Pleasley, for the Pleasley School Board Mr. Joseph Perkin, architect, Main Street, Shirebrook, and Leyton Avenue, Mansfield:—

A. Eastwood, Mansfield	£4,489	14
J. Greenwood, Mansfield	4,466	3
Vallance & Blythe, Mansfield	4,395	0
J. R. Reaville, Newark	4,370	0
F. H. Moore, Mansfield	4,225	0
Lund & Swann, Sheffield	4,165	0
R. Peck, Chesterfield	4,000	0
A. F. Houlton,* Mansfield	3,990	0
W. Thomasson, Whitwell	3,973	0
A. B. Clark, Nottingham	3,734	0

* Accepted.

Portsmouth.—For decorating the large hall in the Town Hall, Portsmouth, for the Town Council:—

C. Grylls, Sutton Road, Postsmouth	£2,743	0	0
Smith, Norfolk Street, Southsea	2,550	0	0
Waring & Gillows, London	2,073	0	0
Campbell, Smith & Co., London	1,810	0	0
F. de Jong & Co., 84, Albert Street, Camden Town, London	1,780	0	0
E. Arthur, Fawcett Road, Southsea	1,480	10	0
J. M. Boekbinder, 11, Pratt Street, Camden Town, London, N.W.	1,433	10	6

Sheffield.—For the rebuilding of the Fox House Hotel, Sherland Lane and Ardmore Street, Attercliffe, Sheffield, for Messrs. the Directors of Thomas Berry & Co., Ltd. Messrs. Hall & Fenton, architects, 14, St. James's Row, Sheffield. Quantities by the architects:—

W. & A. Forsdike	£1,750	0
C. H. Gillam	1,725	0
J. Mastin & Son	1,635	0
E. Moore	1,605	0
T. Margerrison, Dronfield	1,585	0
H. J. Lilleker	1,573	0
A. Bradbury	1,551	10
Martin & Hughes	1,539	0
M. Hancock, Crookes	1,525	0
H. Watkinson	1.513	0
J. Masson	1,511	10
H. White,* 15, Stemp Street	1,500	7
J. W. Dickens	1,500	0
G. Allen,† Bolsover Street	—	

* Accepted. † Declined.

[Rest of Sheffield.]

Southend.—For the erection of eight almshouses and two pairs of villa residences, Chelmsford Avenue, Southend-on-Sea. Messrs. Burles & Harris, architects, Southend:—

J. Dowsett	£3,509	0	0
F. E. Woodhams	3,416	0	0
S. E. Moss	3,400	0	0
J. Holding	3,150	0	0
T. Whur	3,085	0	0
Dupont & Co.	2,950	0	0
Smith & Chambers	2,753	11	8
H. R. Wilkinson*	2,543	10	0

* Accepted.

Surbiton.—For the construction of about 1,800 yds. of 9in. and 12in. stoneware pipe sewers, with manholes, lampholes and house connections, for the Surbiton Urban District Council. Mr. Samuel Mather, A.M.I.C.E., engineer and surveyor:—

Pedrette & Co., Finsbury Park	£3,300	0	0
J. F. Outram, Greenwich	3,258	0	0
Free & Sons, Maidenhead	2,860	0	0
G. Bell, Tottenham	2,448	0	0
J. A. Denmore, Crouch End	2,200	10	9
D. G. Rayner, Croydon	2,047	9	0
S. Atkins, Kingston-on-Thames	1,965	0	0
S. Kavanagh & Co.,* Surbiton	1,918	0	0
W. Adamson, Kingston-on-Thames	1,915	0	0

[Engineer's estimate, £1,964 4s. 7d.]

* Recommended for acceptance.

Tunbridge Wells.—For alterations and additions to the Tunbridge Wells Homœpathic Hospital and Dispensary. Mr. C. H. Strange, architect:—

Mansfield & Son	£2,275	Leney & Son	£1.989
Crates & Son	2,231	Strange & Son*	1,973
Jarvis & Son	2,113		

* Accepted. [All of Tunbridge Wells.]

Tynemouth.—Accepted for the South African War Memorial. Mr. A. B. Plummer, F.R.I.B.A., M.S.I., architect, Newcastle and Tynemouth:—

Robert Beall, Newcastle.

Ware (Herts).—For sewering, levelling, paving, kerbing metalling, channelling and making good Bowling Road, and also for connecting sewers from the said road to Star Lane, for the Ware Urban District Council. Mr. J. Elliott Smales, surveyor, New Road, Ware:—

Grounds & Newton, Tottenham	£1,305
G. Bell, Tottenham Hale, Tottenham	1,245
M. S. Kitteringham, Waltham Cross	1,243
J. Summerfield, Tottenham, N.	1,235
Free & Sons, Maidenhead	1,190
D. H. Porter, Holly Villa, Clapton Square, N.E.	1,188
A. T. Catley,* 23, Lloyd's Square, W.C.	1,167

* Accepted.

Washington.—Accepted for the erection of the Sinclair Memorial Children's Home. Mr. A. B. Plummer, F.R.I.B.A., M.S.I., architect, Newcastle and Tynemouth:—

Thomas Hunter, Washington, co. Durham.

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* * *

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THE WHITE HART HOTEL, HARROGATE.
HARLOW MANOR HYDRO, HARROGATE.
THE GRANBY HOTEL, HARROGATE.
THE VICTORIA HOTEL, GREAT CENTRAL RAILWAY, SHEFFIELD.
THE KING'S HEAD HOTEL, SHEFFIELD.
THE OLD BULL HOTEL, BLACKBURN.
THE ROYAL HOTEL, CARDIFF.
THE GOLDEN CROSS HOTEL, CARDIFF.
THE MOSLEY HOTEL, MANCHESTER.
THE DEANSGATE HOTEL, MANCHESTER.
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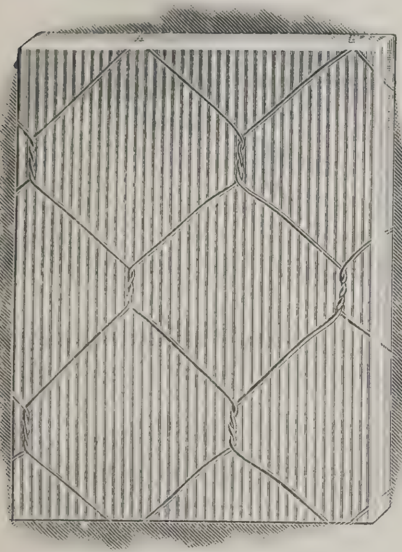

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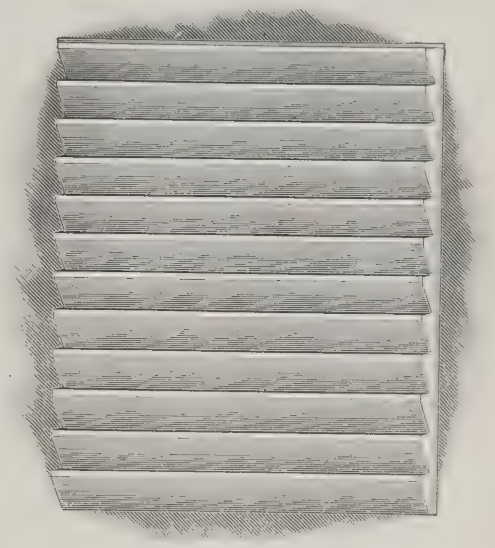

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DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	BUILDING:		
June 10	Consett, Co. Durham—Six Houses	W. Best	T. H. Murray. Architect and Surveyor, Consett.
„ 11	Brighton—Portland Cement	Town Council	F. J. C. May, Surveyor, Town Hall, Brighton.
„ 11	East Ardsley—Store and Houses	Morley Industrial Co-operative Society, Ltd.	R. Castle & Son, London City and Midland Bank Chambers, Cleckheaton.
„ 11	Downpatrick—Twelve Labourers' Cottages	Rural District Council	E. Nolan, Council's Engineer, Union Workhouse, Downpatrick.
„ 11	Cwmpark, Glam.—Chapel	———	Jacob Rees, Architect, Pentre
„ 11	London, S.E.—Repairing Mortuary	Lambeth Borough Council	H. Edwards, Borough Engineer, Lambeth Town Hall, Kennington Green, S.E.
„ 11	Southampton—Chimney Shaft	Corporation	J. A. Crowther, Borough Engineer, Southampton.
„ 11	Wanstead—Additions to Hospital	Urban District Council	C. H. Bressey, Surveyor, Council Offices, Wanstead, N.E
„ 12	Aysgarth, Yorks—Alterations, &c., to Workhouse	Guardians	W. E. M. Winn, Clerk, Askrigg.
„ 12	Ipswich—Enlargement of Post Office	Commnrs. of H.M Works, &c.	Secretary, H.M. Office of Works, Storey's Gate, London, S.W.
„ 12	Ton, Pentre, Wales—Three Houses	T. R. Thomas	W. D. Morgan, Architect, Victoria Chambers, Pentre.
„ 12	Workington—Shop, &c.	———	W. G. Scott & Co, Architects, Victoria Buildings, Workington.
„ 12	Barnes—Four Shops	———	F. & W. Stocker, 90-91 Queen Street, Cheapside, E.C.
„ 12	Camborne, Cornwall—Two Houses	———	W. Raven, Praze. Crowan.
„ 12	Maidenhead—Extensions to Central Station	Town Council	P. Johns, Borough Surveyor, Guildhall, Maidenhead.
„ 12	Thirsk, Yorks—School, &c.	———	T. Stokes, Architect, Thirsk, Yorks.
„ 12	Aber, Bargoed—250 Houses	Powell Duffryn Steam Coal Co., Ltd.	G. Kenshole, Architect, Handbury Road, Bargoed.
„ 12	Soundwell, near Bristol—Church	Church Building Committee	H. M. Bennett, 33 Corn Street, Bristol.
„ 13	Edinburgh—Additions to Hospital	Parish Council	A. Ferrier, Clerk, Parish Council Chambers, Castle Terrace, Edinburgh
„ 13	Carlisle—Inn	New Brewery Co., Ltd.	J. Leslie, 71 Broad Street, Carlisle.
„ 13	Coventry—Extensions to Electric Light Works	Corporation	J. E. Swindlehurst, City Engineer, St. Mary's Hall, Coventry.
„ 13	Acomb, near York—Isolation Hospital	———	W. H. Brierley, 13 Lendal, York.
„ 13	Dunphail, Scotland—House	———	J. Forrest, Architect, Forres.
„ 13	Lismore, Ireland—Creamery	———	W. Hartnett, Secretary, Chapel Street, Lismore.
„ 13	Chester—Shedding, &c.	———	T. A Beckett Secretary, St. Westburgh Chambers, Chester
„ 13	Newtonmore—Villa	S. Macdonald	A. Mackenzie, Architect, County Buildings, Kingussie.
„ 15	Antrim—House. &c.	D. Ross & Sons	F. E. Lockwood. 91 Victoria Street, Belfast.
„ 15	Belfast—Five Shops	J. J. M'Kee	T. Pentland, 35 High Street, Belfast.
„ 15	Ilford—School	School Board	C. J. Dawson, 6 Cranbrook Street, Ilford.
„ 15	Manchester—House	Sanitary Committee	City Architect, Town Hall, Manchester.
„ 15	Merthyr Tydfil—Showroom, &c.	R. T. Jones & Co.	C. M. Davies, 112 High Street, Merthyr.
„ 15	Staverton, near Trowbridge, Wilts—Repairs, &c., to Farm	———	Foley, Son & Mundy, Estate Agents, Trowbridge.
„ 15	West Ham—Repairs, &c., to Schools	Education Committee	W. Jacques, 2 Fen Court, E.C.
„ 15	Aberaman, near Aberdare—Cement and Lime	Powell Duffryn Steam Coal Co, Ltd.	Stores Manager, Aberaman Offices, near Aberdare.
„ 15	Bray, Ireland—Additions, &c, to Boiler-House	Urban District Council	P. Macdonnell, Clerk, Town Hall, Bray.
„ 15	Hebden-Bridge—Chapel and School	———	W. H. Cockcroft, Architect, West End, Hebden-Bridge.
„ 16	Brixham, Devon—Rebuilding Inn	J. W. Chapman	F. W. Vanstone, Architect, Palace Chambers, Paignton.
„ 16	Stowmarket, Suffolk—Alterations, &c., to House	Guardians	J S. Corder, Architect. Wimborne House, Tower Street, Ipswich.
„ 16	Fordingbridge—Pair of Cottages	———	F. Bath, Architect, Crown Chambers, Salisbury.
„ 16	Lower Bebington, Cheshire—Shelter, &c.	Urban District Council	Surveyor, Council Offices, Lower Bebington, Cheshire.
„ 16	Ipswich—School, &c.	School Board	T. W. Cotman, Architect. Northgate Street, Ipswich.
„ 16	Kew, &c.—Works and Repairs to Buildings, &c.	Commnrs of H.M. Works. &c.	Secretary, H.M. Office of Works, Storey's Gate London, S.W.
„ 16	Linlithgow Post Office	Commnrs. of H.M. Works, &c.	Secretary, H.M. Office of Works. 3 Parliament Square, Edinburgh.
„ 16	Kingston-upon-Hull—Additions. &c., to School	School Board	D. J. O'Donoghue, Clerk, School Board Offices, Albion St., Hull.
„ 17	St. Marylebone—Tenement Dwellings	Borough Council	J. Wilson, Town Clerk, Town Hall, Marylebone Lane, Oxford Street, W.
„ 17	Barrow-in-Furness—Slaughter-house, &c.	Corporation	Borough Engineer, Town Hall, Barrow-in-Furness.
„ 17	London, S.W—Joinery Fittings	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
„ 18	Ballinvullen, Mitchelstown—Residence	Guardians	T. A. O'Brien, Clerk, Ballinvullen. Mitchelstown.
„ 18	Pentredwr, Llangollen—Schoolroom	———	J. Jones, Chapel House, Pentredwr.
„ 18	Kensington—Additions to Infirmary	Guardians	J. H. Rutherglen, Clerk, Guardian Offices, Marloes Road, W.
„ 19	Lincoln—Post Office	Commissioners of H.M.Works, &c	Secretary, H.M. Office of Works, Storey's Gate, London, S.W.
„ 19	Stretton Sugwas Hereford—Hospital	Rural District Council	E. G. Davies, 7 Bridge Street, Hereford.
„ 20	Houghton-le-Spring, Durham—House	———	Mr. Pallister, Cross House, Philadelphia, Fence.
„ 20	East Dereham—Repair of Bridge	Mitford R D.C.	W. M. Barton, Clerk, Guildhall, East Dereham.
„ 20	Swansea—Grand Stand, &c.	Horse Show Committee	E. U Strich 14 Wind Street, Swansea.
„ 22	Ilford—Lodge, &c.	Urban District Council	H. Shaw. Council's Surveyor, Town Hall, Ilford.
„ 22	Norwich—Retort House, &c.	British Gaslight Co., Ltd.	T. Glover, Engineer, Bishop Bridge, Norwich.
„ 23	Sheffield—University College	———	Gibbs & Flockton, 15 St. James' Row, Sheffield.
„ 23	Clapham, S.W.—Portion of Car Sheds	———	Architect's Department (Highways Section), 19 Charing Cross Road, W.C.
„ 24	Whitchurch, near Cardiff—Superstructure of Asylum	Cardiff Corporation	Oatley & Skinner, Architects, Edinburgh Chambers, Baldwin Street, Bristol.
„ 24	London, S.W.—Widening, &c., of Station	L. B. & S. C. Railway Co.	Engineer of the Company, London Bridge Station, S.E.
„ 24	Swansea—Additions, &c., to School	U.D. School Board	G. E. T. Laurence. 22 Buckingham Street, Adelphi, London, W.C.
„ 27	Bangor, Ireland—Golf-house	Golf Club	R. H. Finlay, Rent Agent, Main Street, Bangor.
„ 30	Kirdford, Sussex—Churchyard Wall, &c.	———	Vicar, Kidford, Billingshurst.
„ 30	Pembroke Dock—Schoolroom, &c.	———	G. Morgan & Sons, 24 King Street, Carmarthen.
No date -	Ashleigh, Allendale, Northumberland—Additions to House	Mrs. Lee	A. B. Plummer, F.R.I.B.A. Architect Newcastle.
„ -	Halewood, near Liverpool—Additions to Rectory	———	A. B. Plummer F.R.I.B.A., Architect, Newcastle.
	ENGINEERING:		
June 11	Bradford—Electric Lighting	Guardians	F. Holland, 11 Parkinson's Chambers, Bradford.
„ 11	London, E.C.—Goods Wagons, &c.	Burma Railway Co.	Secretary, 76 Gresham House, Old Broad Street, E.C.
„ 12	Wadsley, near Sheffield—Switchboards, &c.	West Riding County Council	County Surveyor, County Hall, Wakefield.
„ 12	Berwyn, near Llangollen—Bridges and Roadways	———	E. Foulkes-Jones, Secretary, King's Bridge Committee, Llangollen.
„ 13	Bradford—Electric Lighting	Corporation	Town Clerk, Town Hall Bradford.
„ 13	Bradford—Kitchen Furnishing	Corporation	Town Clerk, Town Hall, Bradford.
„ 13	Downpatrick, Ireland—Sinking Wells	Rural District Council	R. L. Morrow, Executive Sanitary Offices, Downpatrick.
„ 13	Trim, Ireland—Bridge	Meath County Council	H. J. Cullen, Secretary, County Offices Navan.
„ 13	Ardmore, Ireland—Slip and Breakwater	———	H. W. Mains, Secretary, Office of Public Works, Dublin.
„ 13	Dartmouth—Barge	Harbour Commissioners	Clerk, Harbour Offices, Dartmouth.
„ 13	Bradford—Electric Lighting	Corporation	F. Stevens, Town Clerk, Town Hall, Bradford.

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Complete List of Contracts Open *—continued*

ENGINEERING—*cont.*

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
June	15	Belfast—Incandescent Gas Lamps and Fittings	Harbour Commissioners	G. F. L. Giles, Harbour Engineer, Belfast.
,,	15	Ghiza—Electric Power Supply	—	Commercial Intelligence Branch, B. of T., 50 Parliament St., S.
,,	15	Wimbledon—Sludge-Pressing Machinery	Urban District Council	C. H. Cooper, Engineer, Council Offices, Broadway, Wimbledo
,,	16	Richmond, Ireland—Waterworks	District Asylum Committee	J. H. H. Swiney, Engineer, Avenue Chambers, Belfast.
,,	16	Gloucester—Light Railways	Tramways Committee	A. Dickinson & Co., Telephone Buildings, Birmingham.
,,	16	Sevenoaks—Steel Girder Bridge	Rural District Council	W. H. Bolt, Surveyor of Highways, Leigh, Tonbridge.
,,	17	Vossern- Weert St. George—Railway	—	M. Darteville, Rue de Turquie, No. 18, Saint Gilles, Bruxelles.
,,	18	Manchester—Insulating	Markets Committee	City Architect, Town Hall, Manchester.
,,	18	Monaghan, Ireland—Sewage-disposal Works	District Lunatic Asylum Comtee	J. F. Peddie, 36 Scottish Provident Buildings, Belfast.
,,	18	Swansea—Coal Hopper and Shoot	Harbour Trustees	A. O. Schenk, Engineer, Harbour Offices, Swansea.
,,	19	Londonderry—Hot-Water Heater	—	M. A. Robinson, Engineer, Richmond Street, Londonderry.
,,	20	Coventry—Pipe Subway, &c.	Gas Committee	F. W. Stevenson, Engineer, Gasworks, Coventry.
,,	23	Bullfield and Bolton, Lancs—Widening Railway	Lancs & Yorks Railway Co.	Engineer, Hunt's Bank, Manchester.
,,	23	Bridgwater—Pipe-laying, &c.	Rural District Council	T. M. Reed, Clerk, Bridgwater.
,,	23	Bridgwater—Sluice Valves	Rural District Council	T. M. Reed, Clerk, Bridgwater.
,,	24	London, N.—Electric Lighting Works	Wood Green U.D.C.	J. W. Britton, Clerk, Town Hall, Wood Green.
,,	25	Manchester—Refrigerating Machinery	Markets Committee	City Surveyor, Town Hall, Manchester.
,,	30	Darley Dale, Derbyshire—Waterworks	Urban District Council	G. & F. W. Hodson, Engineers, Loughborough.
July	1	Rangoon—Electric Supply Undertaking	Municipal Committee	Ogilvy, Gillanders & Co., 67 Cornhill, E.C.
,,	4	Bristol—Gangways	Electrical Committee	H. F. Proctor, City Electrical Engineer, Feeder Road, St. Phill
Oct.	30	Marina, Upper Barracca, Malta—Lift	Crown Agents for the Colonies	Receiver-General and Director of Contracts, Valletta, Malta.

FURNITURE:

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
June	11	Stratford-on-Avon—Furniture	Guardians	S. C. Warden, Clerk, Union Offices, Stratford-on-Avon.
,,	11	Portsmouth—Window-Blinds	School Board	J. J. Boscombe, Clerk, Board Offices, Town Hall, Portsmouth.
,,	13	Fulbourn, near Cambridge—Bedsteads, &c.	—	Steward, Cambridgeshire Asylum, Fulbourn.
,,	13	Bradford—Cooking and Service Fittings	Corporation	F. Stevens, Town Clerk, Town Hall, Bradford.

IRON AND STEEL:

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
June	11	Keighley—Ironmongery, Castings, &c.	Corporation	W. H. Hopkinson, Borough Engineer, Keighley.
,,	11	Cornsay Colliery, Durham—Stores	—	Ferins & Love, Market Place, Durham.
,,	15	Aberaman, near Aberdare—Stores	Powell Duffryn Steam Coal Co.	Store Manager, Aberaman Offices, near Aberdare.
,,	15	Chelmsford—Castings, &c.	Corporation	Borough Surveyor, 16 London Road, Chelmsford.
,,	15	Bangkok, Siam—Permanent-way Materials	Royal Siamese State Railways	Director-General, Gehots, Bangkok.
,,	15	Bangkok, Siam—Railway Stores	Royal Siamese State Railways	Siamese Legation, London.
,,	15	Johannesburg—Rails, &c.	Municipality	Mordey & Dawbarn, 82 Victoria Street, London, S.W.
,,	16	London, W.—Ironmongery, &c.	Guardians	H. F. Aveling, 313-319 Harrow Road, W.
,,	23	Mountain Ash, Wales—Pipes	Urban District Council	J. Williams, Town Hall, Mountain Ash
,,	24	London, E.—Iron Staircase	Poplar Union Guardians	Messrs. Clarkson, 156 High Street, Poplar, E.

PAINTING AND PLUMBING:

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
June	11	Preston—Painting, &c.	—	Vicar, St. Mark's Vicarage, Preston.
,,	11	London, S.E.—Painting and Cleaning Mortuary	Lambeth Borough Council	H. Edwards, Borough Engineer, Lambeth Town Hall, Kennin Green, S.E.
,,	15	West Ham—Painting Schools	Education Committee	W. Jacques, 2 Fen Court, E.C.
,,	16	Hove, Sussex—Painting, &c.	—	H. H. Scott, Borough Surveyor, Town Hall, Hove.
,,	16	Hull—Painting, &c., 23 Schools	Kingston-on-Hull School Board	D. J. O'Donaghue, Clerk, School Board Offices, Ashton St., H
,,	16	Ipswich—Painting Schools	School Board	J. H. Hume, Clerk, Tower House, Tower Street, Ipswich.
,,	16	Manchester—Painting	Bath and Washhouses Committee	City Architect, Town Hall, Manchester.
,,	17	Woolwich—Cleansing and Re-decorating	Guardians	T. Cutler, 30 Rectory Place, Woolwich.
,,	23	London, S.W.—Re-painting, &c.	London County Council	Engineer's Department, County Hall, Spring Gardens, S.W.

ROADS AND CARTAGE:

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
June	11	Keighley—Limestone, Granite Flags, &c.	Corporation	W. H. Hopkinson, Borough Engineer, Keighley.
,,	11	Glasgow—Pavement	Corporation	Office of Public Works, 64 Cochrane Street, Glasgow.
,,	11	Stockport—Street Works	Highways & Sewers Committee	J. Atkinson, Borough Surveyor, St. Petersgate, Stockport.
,,	11	Cheshunt—Making-up Road	Urban District Council	R. H. Jeffes, Engineer, Cheshunt.
,,	11	Houghton-le-Spring—Materials	Rural District Council	D. Balfour, Council's Surveyor, Houghton-le-Spring.
,,	12	Berwyn, near Llangollen—Roadways	—	E. Foulkes-Jones, Secretary, King's Bridge Committee, Llang
,,	12	Preston—Paving, &c.	Corporation	Borough Surveyor, Town Hall, Preston.
,,	13	Wimbledon—Vans, &c.	Urban District Council	C. H. Cooper, Engnr., Council Offices, The Broadway, Wimbl
,,	13	Wimbledon—Making-up Roads	Urban District Council	C. H. Cooper, Engnr., Council Offices, The Broadway, Wimbl
,,	16	Acton—Making-up Roads	District Council	D. J. Ebbetts, 242 High Street, Acton.
,,	16	Willesden—Making-up and Paving Roads	District Council	O. C. Robson, Council's Engineer, Public Offices, Dyne Kilburn, N.W.
,,	16	Willesden—Wood-Paving	District Council	O. C. Robson, Council's Engineer, Public Offices, Dyne Kilburn, N.W.
,,	17	London—Repairing Tar-Paving	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
,,	19	East Ham—Tar Paving	School Board	R. L. Curtis, 120 London Wall, Moorgate Street, E.C.
,,	23	London, N.—Wood-Paving Works	Urban District Council	W. H. Prescott, 712 High Road, Tottenham
,,	25	North Walsham—Granite, &c.	Urban District Council	E. J. Simpson, Council's Surveyor, North Walsham.
,,	27	Maidstone—Cement Kerbing	Kent County Council	F. U. Ruck, 86 Week Street, Maidstone.

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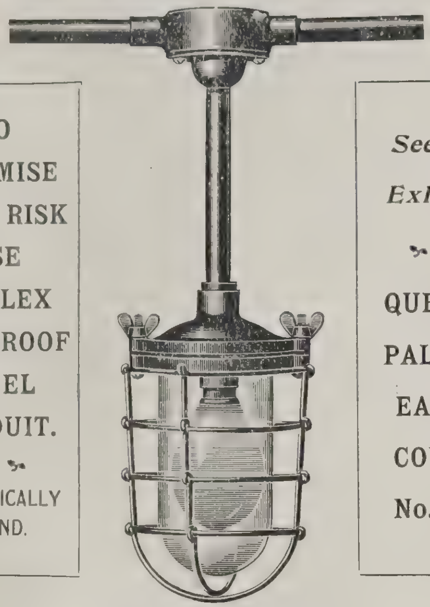

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Complete List of Contracts Open—*continued.*

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	SANITARY:		
June 11	Keighley—Pipes, Cement, &c.	Corporation	W. H. Hopkinson, Borough Engineer, Keighley.
" 15	Lossiemouth Scotland—Drainage Works	Town Council	J. H. Glennie Town Clerk. Lossiemouth.
" 15	Chelmsford—Pipes Disinfectants, &c.	Corporation	Borough Surveyor 16 London Road, Chelmsford.
" 16	Melton Constable, Norfolk—Sewage-disposal Works	Walsingham R.D.C.	T. J. Goldie, Engineer, Bank Buildings Bank Plain, Norwich.
" 17	Consett. Durham—Sewage Works	Urban District Council	C. C Markham, 6 Dixon Terrace, Darlington.
" 18	Monaghan, Ireland—Sewage-disposal Works	——	J. F. Peddie, 36 Scottish Provident Buildings Belfast.
" 18	Woolwich—Scavenging	Borough Council	A. B Bryceson, Town Clerk Town Hall, Woolwich.
" 20	London, N.—Sewers	Tottenham and Wood Green Drainage Committee.	P. E. Murphy, 712 High Road, Tottenham.
" 20	Tottenham—Brick Sewers	Joint Drainage Committee	P. E. Murphy, 712 High Road, Tottenham.
" 22	Belper—Sewers, &c.	Urban District Council	C. J. Lomax. 37 Cross Street, Manchester.
" 30	Barcelona—Sewers	City Extension	Directorate-General of Ministry of Agriculture, Industry. Commerce and Public Works, Madrid.
	TIMBER:		
June 11	Cornsay Colliery. Durham—Timber	——	Ferens & Love, Market Place, Durham.
" 15	Aberaman, near Aberdare—Timber	Powell Duffryn Coal Co.	Stores Manager, Aberaman Offices, near Aberdare.

List of Competitions Open.

DATE OF DELIVERY	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &C.	BY WHOM ADVERTISED.
June 13	Hamilton, Scotland—Cemetery	——	10s. 6d.	A. L. Smith. 25 Duke Street. Hamilton.
" 18	Limerick—Library and Museum	£75, £25.	——	W. M. Nolan, Town Clerk, Town Hall. Limerick.
" 19	Bridlington—Water-Supply Scheme	——	——	Mr. Woodhose, Chairman of Parish Council. Flamborough.
" 23	Poplar, E.—Public Library	£75.	——	Borough Surveyor. Council Offices. High Street, Poplar, E.
July 20	Taunton—Library	£30, £20, £10.	10s. 6d.	G. H. Kite. Town Clerk, Municipal Buildings, Taunton.
No date	Glasgow—Branch Library	——	——	J. D. Marwick, Town Clerk, City Chambers, Glasgow.

New Companies.

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Chapman & Sons (Stoke-on-Trent), Ltd., manufacturers of china, earthenware, glass, clay and marl goods, &c., Atlas China Works, Wolfe Street, Stoke-on-Trent. Capital: £5,000 in £1 shares.

St. Helens and Widnes Brick Co., Ltd., brick, tile and pipe manufacturers, &c. Capital: £20,000 in £1 shares (5,000 preference).

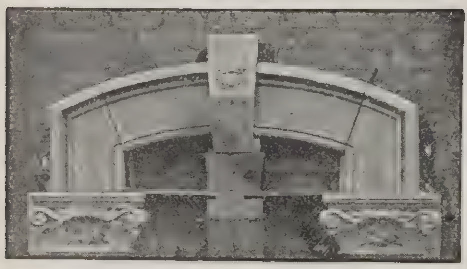
Burtons, Ltd., dealers in machinery, building materials, contractors, tile, slate, concrete and paving manufacturers, &c. Capital: £10,000 in £1 shares.

Electric Lamp Renovating Co., Ltd, lamp manufacturers, electrical engineers, &c., 4 & 5, Warwick Court, High Holborn, W.C. Capital: £20,000 in £1 shares.

Sevenoaks Artizans' Dwellings Co., Ltd,. to erect dwellings, &c., 75, High Street Sevenoaks. Capital: £5,000 in £1 shares.

Stubbs Alexander, Ltd, mechanical, electrical, gas, water, heating and general engineers, &c., 26, Herbert Street, Wimbledon. Capital: £1,000 in £1 shares.

Charles Jordon & Co., Ltd., ironfounders, pipe founders, engineers, &c. Capital: £15,000 in £10 shares (1,000 preference).



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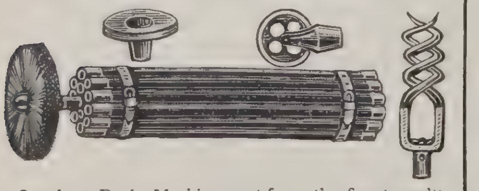

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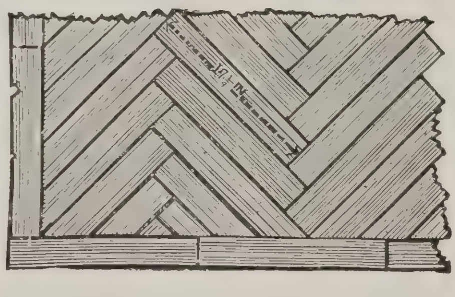

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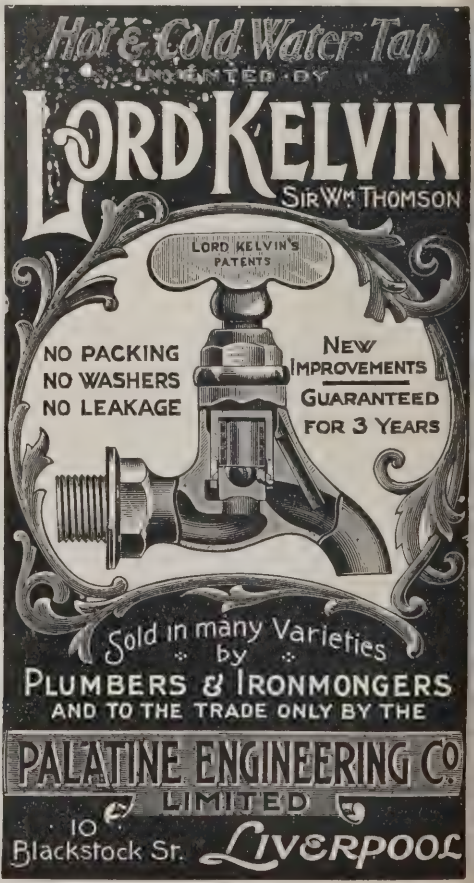


THE BUILDERS' JOURNAL
AND ARCHITECTURAL RECORD.

June 17, 1903. Vol. 17, No. 436.

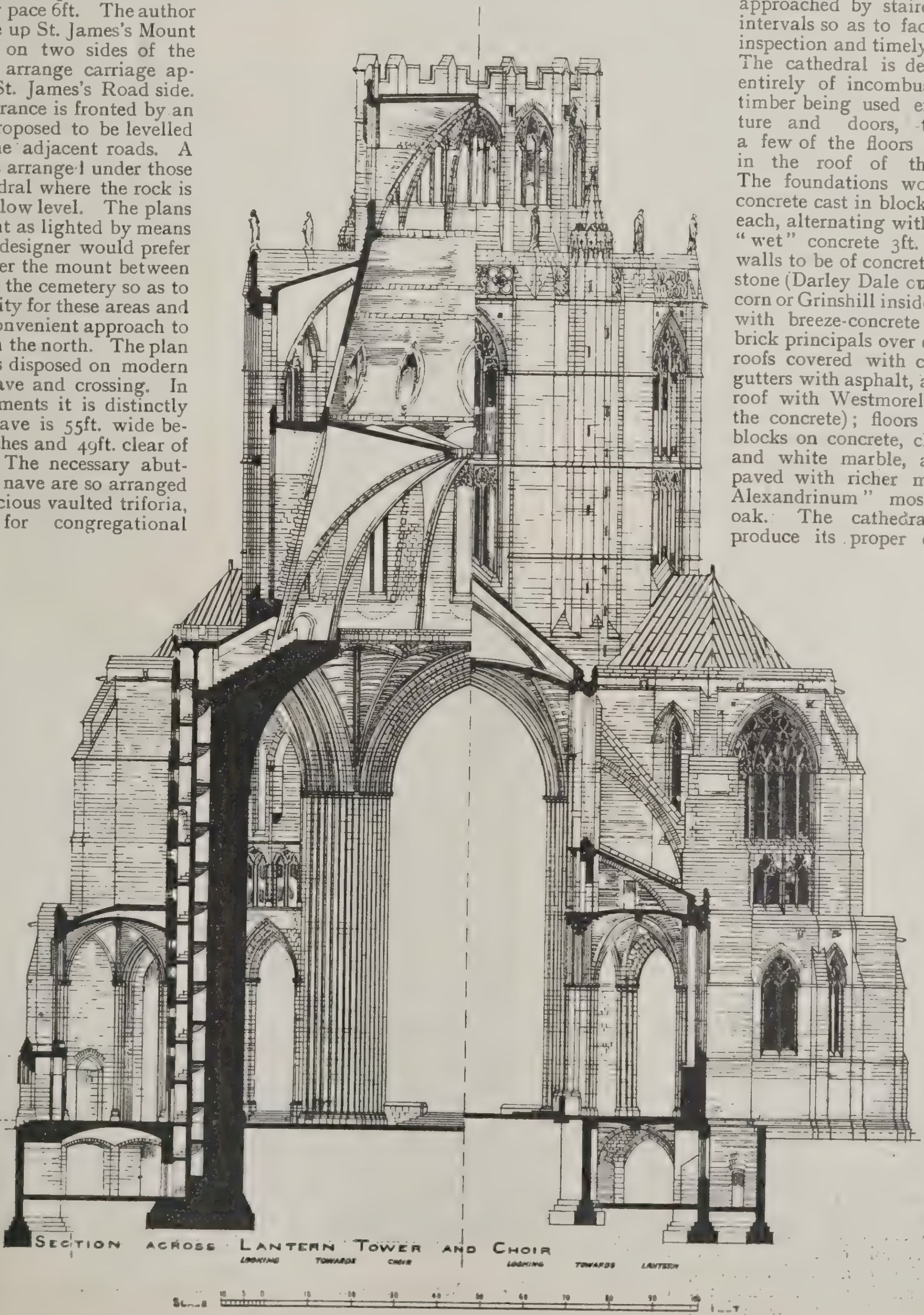
9, East Harding Street, E.C.

LIVERPOOL CATHEDRAL.

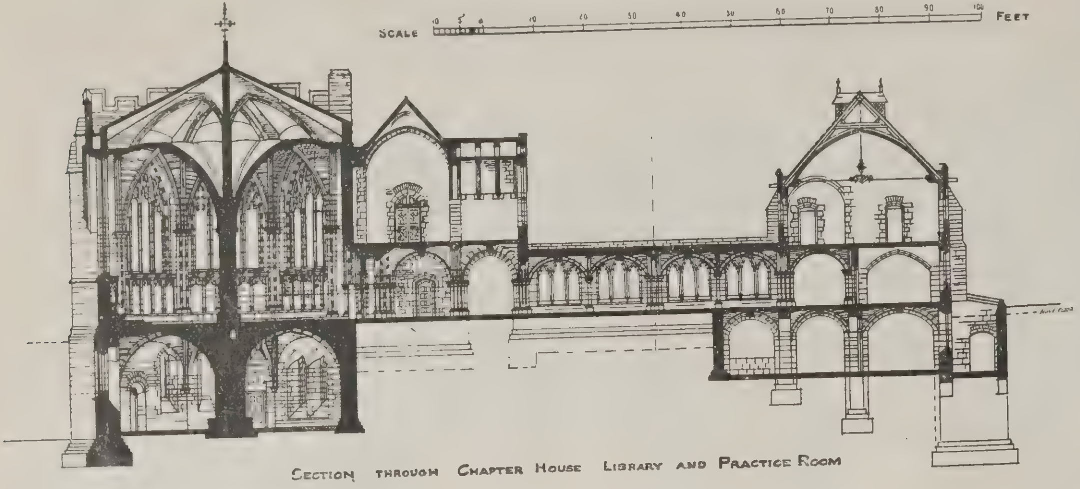
Some Details of Mr. Nicholson's Design.

IN the design for Liverpool Cathedral submitted by Mr. C. A. Nicholson, and illustrated in this issue, the axis of the building lies north and south: the choir and morning chapel are at the south end, the axis of the latter being east and west. The level of the nave floor has been fixed at 150ft. above Ordnance datum. The choir and chapel floors are 3ft. above this line and the altar pace 6ft. The author proposed to make up St. James's Mount to form terraces on two sides of the cathedral and to arrange carriage approaches on the St. James's Road side. The principal entrance is fronted by an open "square" proposed to be levelled to the lines of the adjacent roads. A basement storey is arranged under those parts of the cathedral where the rock is not found until a low level. The plans show this basement as lighted by means of areas, but the designer would prefer if possible to lower the mount between the cathedral and the cemetery so as to obviate the necessity for these areas and to afford a more convenient approach to the basement from the north. The plan of the cathedral is disposed on modern lines with wide nave and crossing. In liturgical arrangements it is distinctly Anglican. The nave is 55ft. wide between the pier arches and 49ft. clear of vaulting shafts. The necessary abutments of so wide a nave are so arranged as to provide spacious vaulted triforia, capable of use for congregational purposes on special occasions. The nave aisles are comparatively narrow, as their principal purpose is to serve as passages, to afford room for monuments, and to give an effect of spaciousness to the interior of the church. The nave is vaulted with a Welsh groin in order to avoid loss of space under the external roof. The aisles have plain quadripartite vaults, and the triforium is ceiled with transverse barrel-vaults between the buttress arches. The crossing is hexagonal on plan, and is described about a circle of 90ft. diameter. The choir and transepts are each 45ft. between arches, the transepts being semi-hexagonal on plan and surrounded with passage aisles and recessed bays between their buttresses. The crossing has groined pendentives ranging with the main vaults, above which it is carried up as a dodecagonal tower finished with a small lantern carried upon a cone. The internal groining of the crossing is 156ft. from the nave floor, but a small eye is left in this vault showing the upper lantern from the floor of the church.

The crossing being the space which would generally be used for congregational purposes, special attention was given to its acoustics: the vault is kept comparatively low and the preacher is placed on the long side of the space. The choir is four bays in length and lighted by clearstory windows. The morning chapel forms a quasi-transept after the fashion of the "nine altars" at Durham, in order that the surroundings of the principal altar might not appear either gloomy or restricted. Passages are provided around the whole cathedral at the triforium and clearstory levels. These and the gutters are approached by staircases at convenient intervals so as to facilitate the constant inspection and timely repair of the fabric. The cathedral is designed to be built entirely of incombustible materials, no timber being used except in the furniture and doors, the bell framing, a few of the floors in the towers, and in the roof of the practice room. The foundations would be of cement-concrete cast in blocks of about two tons each, alternating with bands of ordinary "wet" concrete 3ft. or 4ft. high. The walls to be of concrete blocks faced with stone (Darley Dale outside and red Runcorn or Grinshill inside); the roofs formed with breeze-concrete arches carried on brick principals over each pier (principal roofs covered with cast lead, flats and gutters with asphalt, and the vestry block roof with Westmoreland slates nailed to the concrete); floors generally of teak blocks on concrete, choir floor of black and white marble, and the sanctuary paved with richer marbles and "opus Alexandrinum" mosaic; furniture of oak. The cathedral is designed to produce its proper effect without the aid of sculpture or painting, though both might advantageously be employed. Heating by low-pressure hot water and lighting by electricity in such places only as may be necessary for the convenience of worshippers, as it was the particular aim of the architect to give a mystery to the interior, which would be quite impossible with a multitude of lights placed in the ordinary way all over the building. The main elevation and longitudinal section are given in our centre plates this week, the other elevations, sections, details and plan of the building being reproduced among the text.



DESIGN FOR LIVERPOOL CATHEDRAL BY C. A. NICHOLSON.



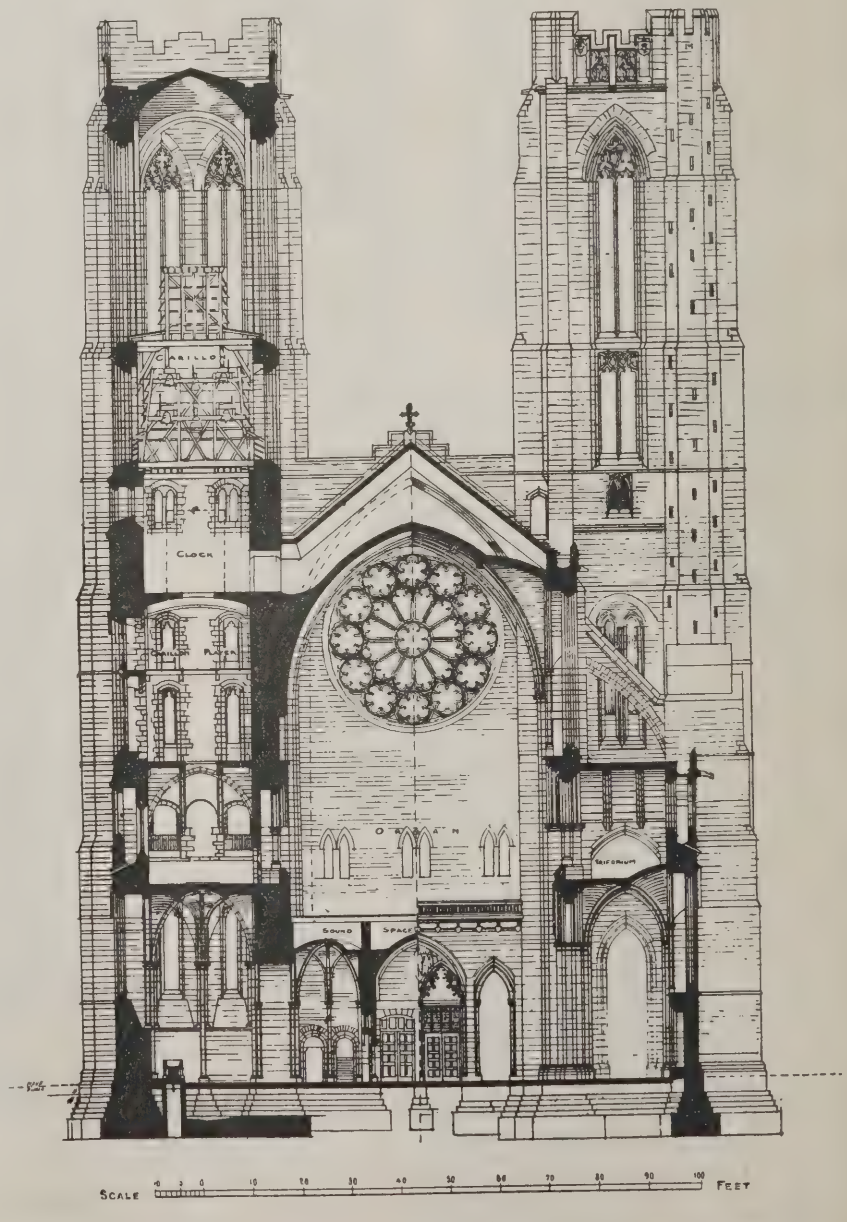
DESIGN FOR LIVERPOOL CATHEDRAL BY C. A. NICHOLSON.

NEW ARCHAEOLOGICAL DISCOVERIES.

ANNOUNCEMENTS are made of fresh archæological discoveries in three different quarters, namely, at Beni Hasan, Nippur and Knossos. At **Beni Hasan** excavations have been made during the past season in the hill-side, a site already famous for its painted tombs and early architectural features. Below the gallery along which these lie there has now been found an extensive necropolis. Though the rock-hewn tombs for which the site has become known are themselves of the XIth and XIIth Dynasties, it has been supposed that the district was already of importance at an earlier period, dating possibly as far back as the Old Empire. It is now seen that a gallery of smaller rock tombs, at a lower level, was hewn probably in the VIth Dynasty. These tombs are eight or ten in number, two of them being inscribed in the style and with the names characteristic of the period: one of them is also decorated in bas-relief and with paintings. The other tombs were all of the early Middle Empire—the XIth and early XIIth Dynasties. Four hundred and ninety-two of them were opened and examined. These, too, were hewn in the rock, but were of the more familiar character known as pit-tombs. More than 100 of them had never been previously entered, and their doors were now opened for the first time since they had been closed 4,000 years ago. In one tomb were several wooden models of objects and scenes familiar from the wall-paintings of the larger tombs—a great rowing-boat, a model of a granary, and representations of men engaged in various occupations. Musical instruments and objects of other significance were also found in the tombs, an object of special architectural interest being a wooden capital in the form of a lily. The objects, it is pleasing to know, will enrich the museums of our Universities—Oxford, Cambridge and Liverpool being represented among the patrons—as well as some of the best known private collections of Egyptian antiquities in England. Previous to distribution it is hoped to hold an exhibition of them at Burlington House during next month.

The Excavations at Nippur under the direction of Professor Hilprecht have also been very fruitful.

Already sufficient work has been done upon the great Temple of Bel to show that previous conceptions of a Babylonian temple will have to be modified considerably; and important light has been thrown upon the different periods of building—from pre-Sargonic times to early Arabic days—represented in the Nippur mounds. One of the most interesting structures, and one which has been most thoroughly excavated, is a small Parthian palace, which lay on the south-west side of the Shatt en-Nil, the old canal which divided the ancient city into two nearly equal portions. Doctor Peters, the director of the first two excavations, partly cleared this building; and Mr. Haynes, his successor, made a more thorough examination of it; but it remained for Hilprecht to complete the work and determine the age and other particulars of the structure. Peters believed that the building was erected somewhere between 1450 and 1250 B.C. Hilprecht has shown conclusively that it was built a thousand years later. Roughly speaking, the palace is square on plan, each side being about 170ft. long. In its construction large (12in. by 12in. by $7\frac{1}{2}$in.) unbaked bricks were mostly used, but in some portions baked bricks had a place. The walls varied in thickness from 3ft. in the partition walls to 8ft. 6in. in the exterior ones. Externally the building was remarkably plain; the surfaces of three of the walls were broken by shallow buttresses, but the fourth, which faced the canal, was quite bare. There was only one entrance, placed nearly in the centre of the north-west façade. This doorway showed evidence of considerable skill and some taste on the part of its builders. It was constructed in baked brick and stuccoed with white plaster. On either side stood a pedestal, rising from an



DESIGN FOR LIVERPOOL CATHEDRAL BY C. A. NICHOLSON: SECTION ACROSS BAPTISTERY AND NAVE.

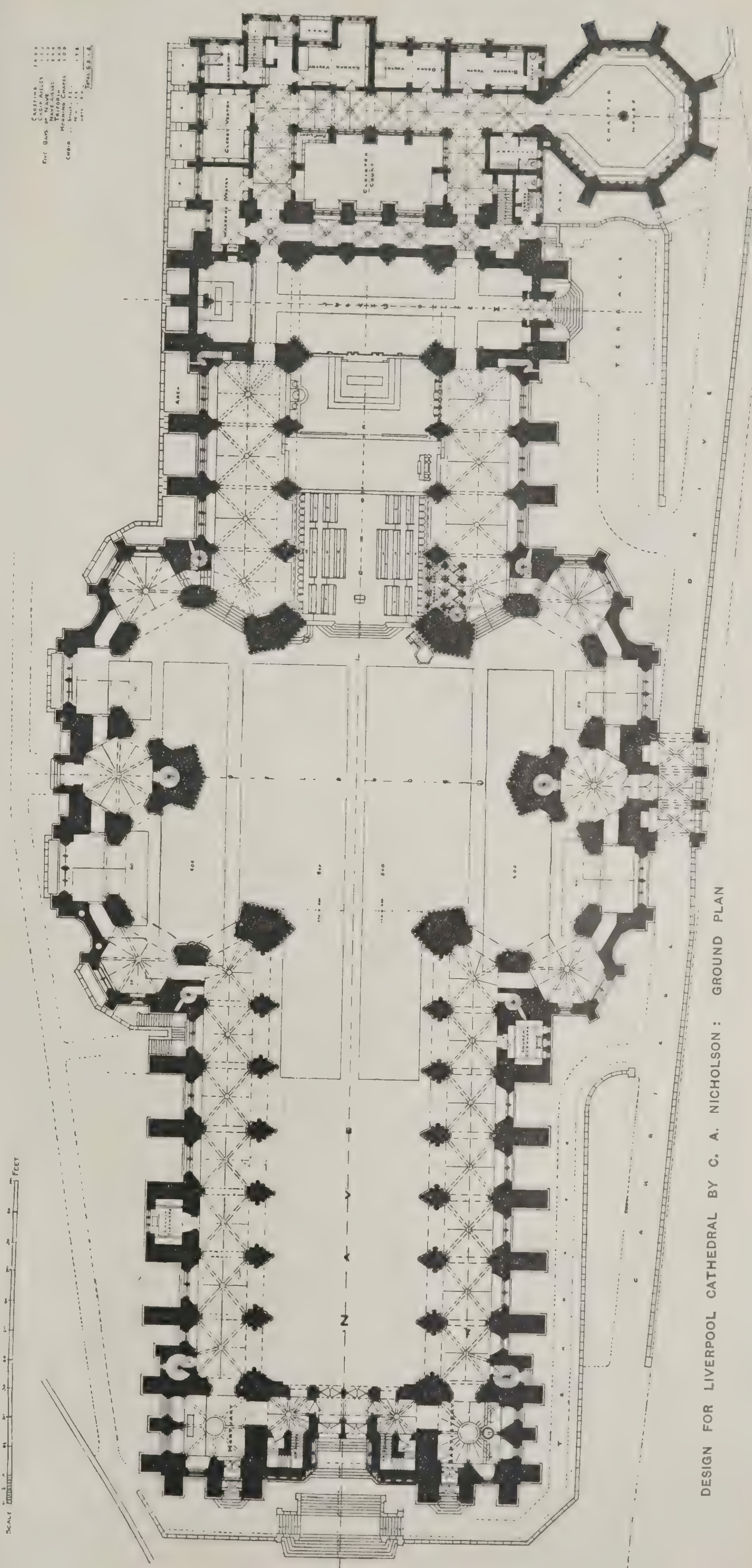
ornamental base and decorated with small pediments. The junction of the crude brick with the baked was concealed by plaster mouldings, and faint traces of fluting were visible on the pedestal. Internally the building was divided into two parts, one of which served for the men's quarters and public apartments, the other for the servants' quarters and the domestic portion of the household—corresponding to the harem buildings of the present day. By an ingenious arrangement of lobbies and narrow passages, the "harem" apartments and servants' rooms were completely cut off from the rest of the building. They comprised a kitchen, several store chambers, a bathroom—which was provided with a bitumen-covered pavement sloping towards a drain in its centre—and sleeping apartments, in which were raised platforms (or beds) of brickwork. The most ambitious feature of the plan was an open court with a colonnade, which was reached from the entrance through a couple of anterooms. From this court a number of small ooms open off, and opposite the portico are he two largest apartments in the palace. A smaller court stood between the servants' uarters and the superior rooms of the harem." In both these courts were columns f burned brick, stuccoed with fine plaster. n the principal one were four circular olumns on each side, with a square one at ach angle, all built up with a foundation of urned brick, while the court itself was paved vith crude brick. The columns were plainly Babylonian imitations of Doric columns," nd, in fact, the characteristics of the building throughout are, as Professor Hilprecht oints out, entirely un-Babylonian and much ore like the features "of the ancient Greek ouses on Delos." The balanced plan, the eatment of the entrance, the columns themlves, are all plain evidence of the correctess of Hilprecht's dating of the building. view of their very limited choice of aterial, the builders may be pardoned for sing stucco; and the ingenuity they dislayed in constructing the tapering columns ith specially moulded bricks and in buildg up the capitals with two distinct patrns of mouldings is far ahead of the work the earlier builders at Nippur.

At many widely separated points of the te interesting buildings were discovered, cluding the now famous "Library," but is impossible to give a description of l of them, owing to lack of space. Suffice to say that in the upper strata of the ound was a huge fortified building, conctured to have been the palace of a prince governor, the rooms in one part being nstructed with double walls for the sake coolness. The citadel was an immense atform, cruciform on plan, which rose out 30ft. above the surrounding buildings the fortress and had still a second stage, t lower than 20ft., rising from its centre. deed, this fortified palace must have been ll-nigh impregnable; for all the buildgs were enclosed by yet another strong ll, which, when excavated, rose to a ight of over 60ft., was more than 30ft. ck at its top, almost 40ft. at its base, and s strengthened by huge buttresses at its ners and smaller ones erected at equal tances between them.

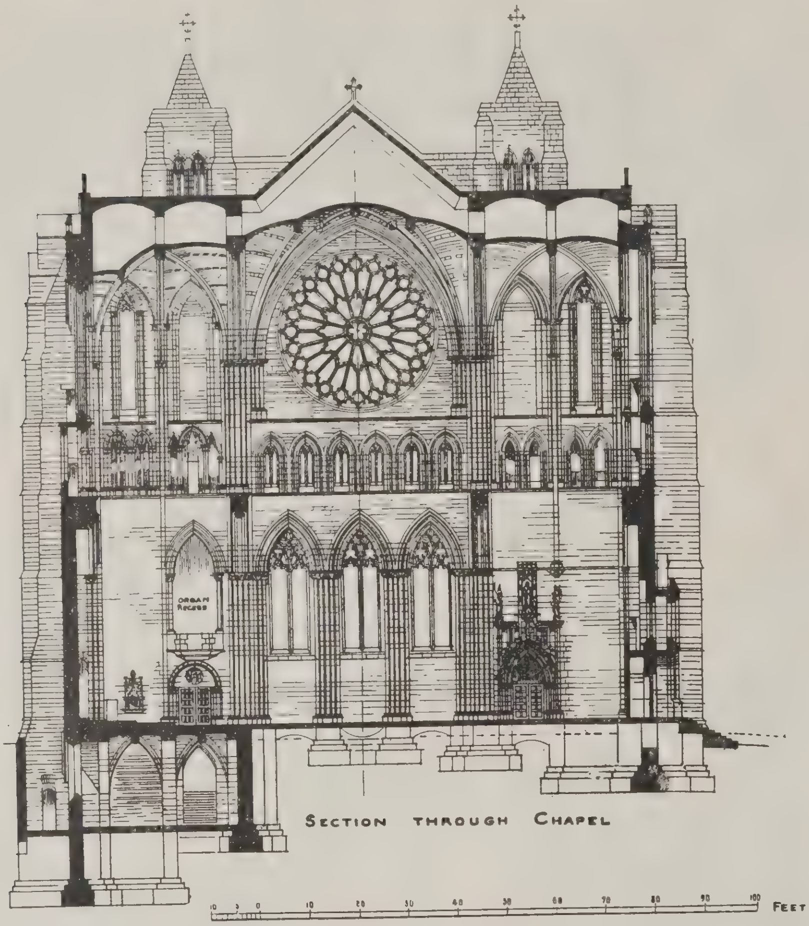
elow this building were the remains of earlier one, of a very similar character, of Seleucidan period; and lower still were remains of the old temple.

Further Discoveries at Knossos

announced by Dr. Arthur J. Evans in the imes." At the "House of Minos," on the th-west side, a broad double flight of s has been uncovered, descending at right gles to one another, while between them, rding an exceptional point of vantage, is uare bastion with a paved floor at top. higher of the two flights consists of teen steps, about 35ft. wide; the southern



DESIGN FOR LIVERPOOL CATHEDRAL BY C. A. NICHOLSON : GROUND PLAN



DESIGN FOR LIVERPOOL CATHEDRAL BY C. A. NICHOLSON.

flight is about 50ft. wide. The tiers of steps, or seats, look down on a square area, the rough paving of which seems to have been originally covered, as elsewhere, with a cement floor, and probably backed by a wall. So that here indeed was a place to witness spectacles—the germ of all future theatres—with places for about 500 spectators.

Between this stepped area and the western court of the palace a conglomeration of irregular small-roomed buildings came to light, of great antiquity. Whether or not we have here represented an early shrine and its dependencies, it is certain that these irregular buildings contained some objects of exceptional beauty and value. Here were found two large jars of the best "Palace" style—one with naturalistic figures of octopuses, the other showing a design composed of rockwork and Egyptianizing plants. Still more important was the discovery of a whole deposit of bronze vessels wedged in between two walls, with which no metal objects of the kind found at Mycenæ itself can compare either in technique or in beauty of design. They belong to the latest period of the palace—say to the sixteenth century B.C.

In the northern part of the palace a whole system of deep-walled chambers, consisting sometimes of long rectangular rooms, sometimes of large square pits, has now been uncovered. The walls descend over 25ft. sheer below the upper-floor level; and it is now clear that these dungeon-like structures belonged to the earlier Palace, and were to a great extent filled in at a later date. Here and elsewhere the continued investigation of the earlier strata has produced a multiplicity of new evidence illustrative of the long course of civilized development which on this site preceded the "Late Minoan" stage represented by the Palace in its present shape. This "Late Minoan" foundation cannot be brought down beyond the sixteenth century before our era. The Hyksos and Thirteenth Dynasty objects found in it, but even more the considerable evolution of art perceptible in its different stages, take us back at least to the beginning of the Second Millennium. But in some respect the most brilliant days of early Cretan civilization lie well beyond this sufficiently remote date. It is satisfactory to be able to record that Egyptologists, including Professor Petrie, who have recently been able to inspect the early objects from this site, have unanimously confirmed the opinion that they point to the civilized intercourse between Crete and the Nile Valley extending back to the time of the earliest dynasties—in other words, at least to the middle of the Fourth Millennium B.C. And it must be remembered that below this early civilized stratum a vast Neolithic layer 25ft. thick, itself divisible into different periods, covers the whole surface of the hill. An entirely new perspective of antiquity has here opened, and the superposition of the successive strata is as clear as in any geological section.

The evidence supplied by the Palace itself is confirmed and supplemented by that derived from the private houses of the extensive prehistoric city by which it was surrounded. One house, especially, is a miniature palace; here, as there, the whole upper-storey plan can be made out, and of the two staircases that it contains one has a double head above. Unlike the Palace, however, which is largely composed of earlier elements, this building shows a striking uniformity of structure, and exhibits the architectural style of the later palace period in its purest form. There is proportionately less rubble work here, many of the walls consisting entirely of fine gypsum blocks which had been covered by a thin coating of painted plaster. One room so constructed, with a monolithic pillar of the same material in its centre, is specially interesting from the fact that the sockets for the massive beams of the floor above are cut into the stonework, so that the whole can be reconstructed. Of the magnificent furniture once contained in this house the best idea is supplied by a tall painted jar found on the landing of the principal staircase, adorned with rich papyrus sprays partly in relief—a hitherto unexampled Ceramic technique. But the centre of interest in the house itself is the principal hall, or Megaron. The body of this hall, with its light area, column bases, and pillars, resembles the Hall of the Double Axes of the Palace itself on a smaller scale; but its inner end shows a wholly unique arrangement. It terminates here in a kind of cancellus, or raised balustrade, which originally supported two columns. Between these the balustrade is broken by a small ascending flight of three steps, on one of which stood a tall columnar lamp of porphyry-like stone in the position in which it had been originally set. This stepped central opening in the balustrade leads, after a narrow interval, to a square niche in the back wall of the room, lined with gypsum slabs, and containing the remains of a gypsum seat or throne—the occupant of which must have commanded the entire hall. It will be seen that the whole arrangement anticipates in an extraordinary manner that of the later *basilica*—the columnar nave, the cancellus, and tribune. The throne and apse-like recess may all, in one way or other, be brought into the comparison. The exceptionally fine construction of the building makes it indeed natural to suppose that it was in reality, as well as appearance, a miniature palace or royal villa, and that a Minoan prince once filled the seat of honour in its principal hall.

EDINBURGH A.A.

THE Edinburgh Architectural Association recently journeyed to Perth and visited St. John's Church and St. Ninian's Cathedral. Mr. A. G. Heiton, architect, Perth, conducted the party over the church, and gave a descriptive account of it. The date of the original foundation is unknown, but there was a building erected by David I. about the year 1126. The church was consecrated A.D 1242 by David de Burnhame, Bishop of St Andrews, and the choir and tower rebuilt by Robert Bruce in 1328. After the Reformation the settlement of a second minister to th charge was effected, and the partition wal erected separating the little church, nov known as the West Church. The nave arcad was probably erected at this time, A.D. 159 The partition separating choir from transept was built in 1773, and a third charge wa created. The church formerly containe forty altars, richly decorated and endowe The bells are interesting, and mention c them is made in 1400, 1506, &c., and ther was an organ erected, probably on the roo screen, in 1510. Seats were erected in th Great Church in 1582; galleries were erecte in 1608, and various alterations took plac in 1720, 1760, 1773. In 1892 a great improv ment was brought about in the East Churc by removing the galleries, and the paint an whitewash from the internal stonewor Similar improvements were effected in th West and Middle Churches in 1894 and 189 the galleries, however, being left in the cases. Mr. A. Hunter Crawford, in proposin a vote of thanks, expressed the hope that t day was not far distant when the obstructin dividing walls would be removed, restorin the building to its orginal state and formin a really noble church. At St Ninian Cathedral Mr. Heiton again acted as lead At the conclusion Mr. Hippolyte J. Bla proposed votes of thanks. The memb afterwards drove to Scone Palace, whe they were conducted through the palace a policies.

ST. NICHOLAS'S CHURCH, LEICESTER.

REPORT ON THE RESTORATION WORK.

Views of the Society for the Protection of Ancient Buildings.

THE committee of the Society for the Protection of Ancient Buildings has adopted the following report of its secretary, Mr. Thackeray Turner, with reference to the condition and proposed restoration of St. Nicholas's Church, Leicester :—

It appears that the important question which has to be decided is how the tower is to be treated. It is a central tower, standing between the nave and the chancel, with an aisle on either side. There are four Norman arches, opening into the nave, the chancel, and each of the aisles, and above these arches in the inside is a beautiful Norman wall arcade with square pilasters carrying the arches. I observed no sign of movement in any of the four arches. Externally, just above the level of the nave parapet, Roman tiles are built in herring-bone fashion. There are Saxon clearstory windows on the north side of the nave, which now open into the north aisle. Above the herring-bone work just mentioned the tower is in two stages of arcading—five arches on the lower stage, and six, forming interlacing arches, on the upper stage, above which there is a projecting cornice carried on corbels, which, until a short time ago, carried a perfectly plain stone parapet with short pinnacles at each end. Part of the parapet fell some time since, and has been replaced by a plain brick parapet without pinnacles. None of the shafts carrying the arches are now to be seen, although I was told that one remained behind the clock face on the south side.

Some years ago the tower was found to be in a critical condition, and it was well tied together with iron rods, and all the arcades built up flush with the wall face, so that at present the only stonework to be seen are the arches of the wall arcades, which are not moulded or ornamented in any way, and the stonework which comes flush with them ; also the cornice and the corbels which I mentioned before, and the wall face below the arcading where the Roman tile herring-bone work occurs.

I was informed that it was proposed to restore the tower, taking out the brickwork, and putting in new caps, bases and shafts. If this is done, I am convinced that most of the stonework remaining will have to be replaced with new stonework. Of course, the wall face which formed the recess work of the archway may be intact behind the brickwork, but my opinion is that if the tower is restored after this manner the result will be that to the ordinary beholder it will appear as a new tower.

I would suggest that the tower may be considered from three different standpoints—one, the architectural ; two, the archæological or historical ; three, the pictorial. The restoration aims at meeting the first of these, but I doubt whether it can be very convincing as a reproduction of what once existed.

Archæologically, as the tower stands, it is of very great interest ; and pictorially, I am convinced that no artist would wish to see a change made, and the brick parapet which has recently been added is exactly what should have been put up, although I am informed it was only put up as a temporary measure.

I examined the tower carefully inside at the bell stage, and although I found considerable cracks in the walls I feel convinced that the repairs which were done when the ties were put in have proved thoroughly effectual, and I could see no signs whatever of recent movement.

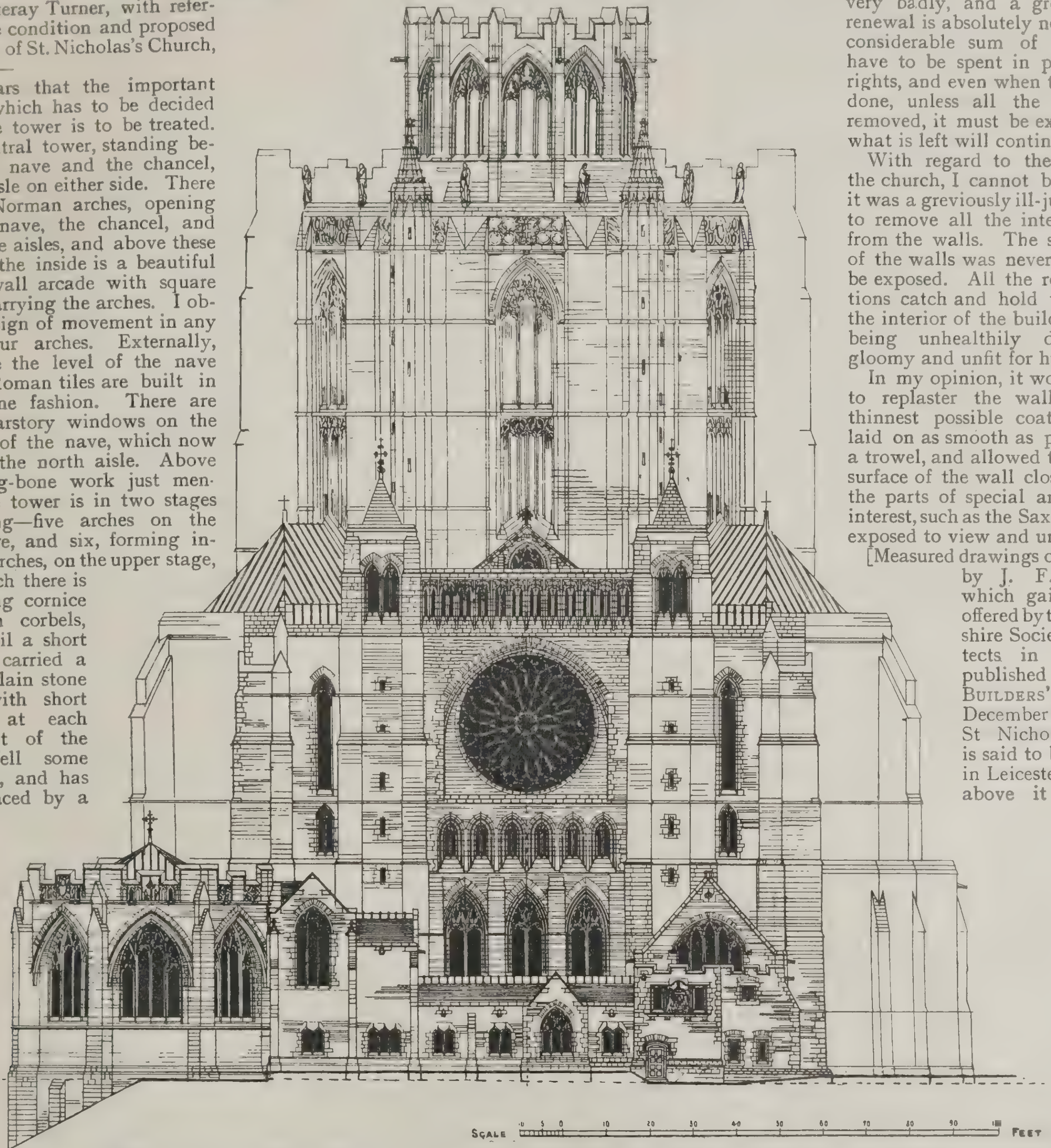
The three bells are said to be the oldest bells in Leicester. One of them is cracked, but it is to be hoped that it will not be recast, for it is too valuable a relic to be melted up for old metal.

The whole of the north aisle was rebuilt some years ago, but, unfortunately, the stonework is standing the action of the weather very badly, and a great deal of renewal is absolutely necessary. A considerable sum of money will have to be spent in putting it to rights, and even when this has been done, unless all the freestone is removed, it must be expected that what is left will continue to decay.

With regard to the interior of the church, I cannot but feel that it was a greviously ill-judged action to remove all the internal plaster from the walls. The stone surface of the walls was never intended to be exposed. All the rough projections catch and hold the dirt, and the interior of the building, besides being unhealthily dirty, looks gloomy and unfit for human use.

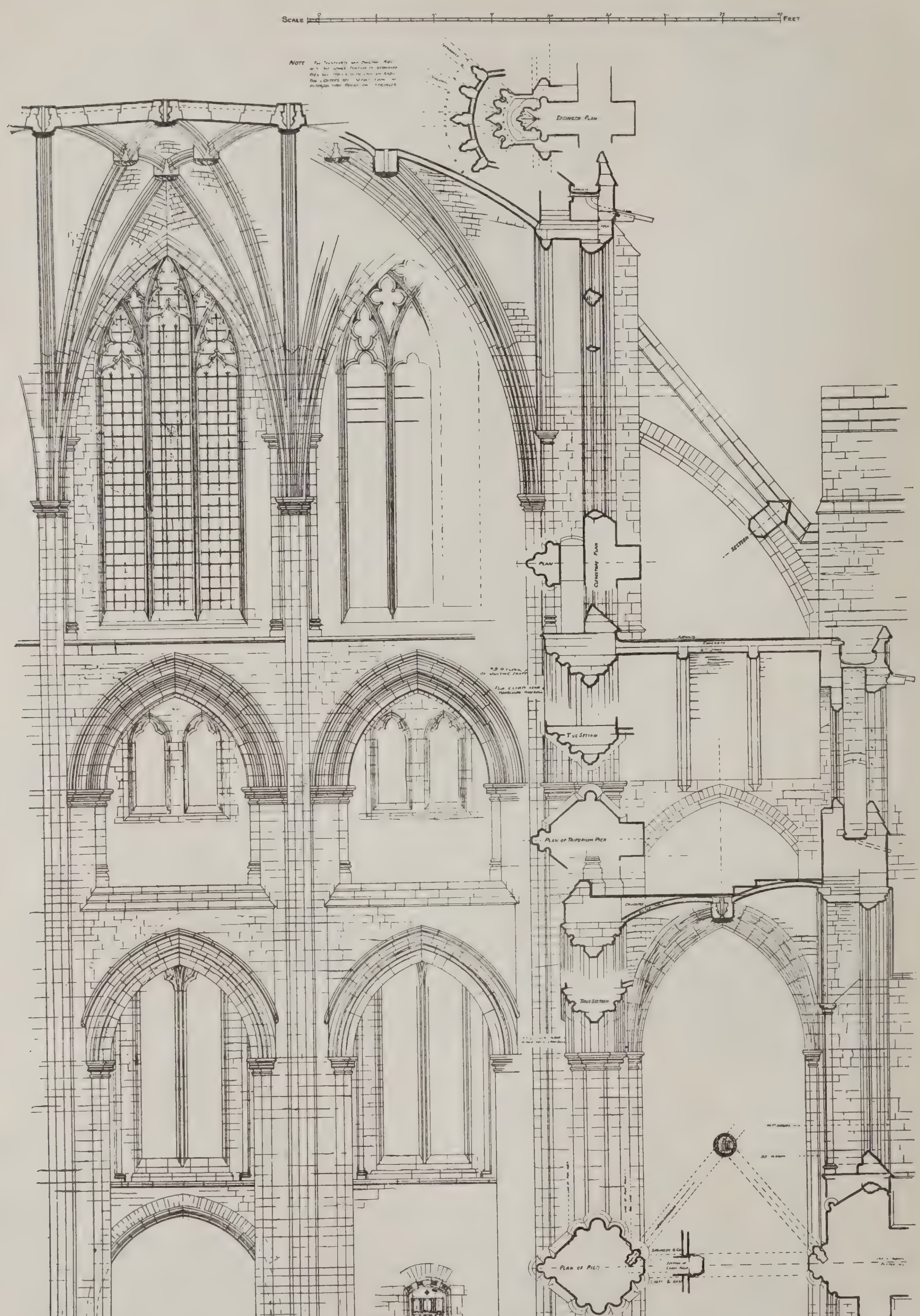
In my opinion, it would be wise to replaster the walls with the thinnest possible coat of plaster, laid on as smooth as possible with a trowel, and allowed to follow the surface of the wall closely, leaving the parts of special archæological interest, such as the Saxon windows, exposed to view and unplastered.

[Measured drawings of the church by J. F. Goodacre, which gained a prize offered by the Leicestershire Society of Architects in 1893, were published in THE BUILDERS' JOURNAL for December 10th, 1902. St Nicholas's Church is said to be the oldest in Leicester. As stated above it consists of nave, chancel, north and south aisles, and has a square Norman tower much patched with brickwork and formerly surmounted by a spire, which was taken down owing to its insecure position. Two chapels at the east end, dedicated to St. Augustine and St. Columba, were taken down as early as 1087. The new north aisle was added in 1875, and takes the place of an old Norman aisle which was taken down in the seventeenth century. The organ covers the greater portion of a fine white marble slab which is supposed to be one of the most ancient gravestones in Leicester.]



DESIGN FOR LIVERPOOL CATHEDRAL BY C. A. NICHOLSON : ELEVATION TOWARDS ST. JAMES'S MOUNT.

Mr. Henry Jones, architect, of Southport, has been appointed surveyor under the Settled Land Acts for the Towneley estate of the Earl of Abingdon.



DESIGN FOR LIVERPOOL CATHEDRAL BY C. A. NICHOLSON: ELEVATION AND SECTION OF NAVE BAY.

THE INTERNATIONAL BUILDING TRADES' EXHIBITION.

THE International Building Trades' Exhibition now open at the Royal Agricultural Hall, Islington, London, N., is more extensive than any of its predecessors, which proves how popular it has become among trade firms and those concerned in building. The whole of the space in the hall is now practically occupied, and if the number of exhibitors continue to increase some additional hall will need to be taken. This is the twenty-fifth exhibition of its kind, the five last of which have been so successfully conducted by Mr. H. Greville Montgomery. Visits will be paid by the Architectural Association, the Society of Architects, the Institute of Builders, the London Master-Builders' Association, the Institute of Sanitary Engineers, the Association of Municipal and County Engineers, and the Institute of Clayworkers, while a large party of members of the Union Céramique de France are also paying a visit to the exhibition.

The opening luncheon took place on Saturday. Mr. Montgomery occupied the chair, and among those present were Col. Edis, Mr. Edwin O. Sachs, Mr. Maurice B. Adams, Mr. C. H. Shoppee, Mr. Arnold Mitchell, Mr. W. E. Riley, Mr. E. R. Robson, Mr. Lewis Solomon, Mr. George Wragge (Eastwood & Co.), Mr. Henry Pels, Mr. Ellis Marsland, Mr. George Jennings, Mr. Mark Gentry, Mr. H. O. Cresswell, Mr. W. Grellier, Mr. Max Clarke, Mr. H. C. Montgomery and Mr. J. Montgomery.

The numerous exhibits are disposed in much the same manner as before, the stands being ranged in rows alphabetically numbered, and occupying the gallery and minor hall as well as the main hall. As these total altogether to nearly 250, it is only possible for us to notice the more important of them.

Robert W. Blackwell & Co., Ltd.

Messrs. Robert W. Blackwell & Co., Ltd., 59, City Road, E.C., occupy bay No. 30 in the gallery, where they exhibit "Ruberoid" damp-course and roofing. The former material is practically new to the market, but has, where used, met with entire approval. It contains no tar or asphalt, and will not become brittle, dry up, rot, decay, shrink or squeeze out, and, most important of all, it is an absolutely permanent insulation against damp. Messrs. Blackwell's stand is covered with Ruberoid roofing, and illustrates the method of applying it over boards in the usual way, and also over wire netting. In laying the roofing the sheathing boards should be clean and of uniform thickness, to ensure a level surface. Seams are run with the pitch of the roof and the courses lapped 2in. and cemented with "Ruberine," afterwards nailing down with tin caps. The roofing does not need to be painted, though under exceptional exposed conditions a coat of "Ruberine" paint is recommended after eighteen months. Ruberoid used as a siding and lining for buildings is also shown, as well as the firm's well-known "P and B" "Giant" insulating paper for cold-storage work and their "P and B" building and sheathing papers. These materials have secured eighteen medals at various exhibitions, including Paris and the Pan-American.

James Keith & Blackman Co., Ltd,.

Messrs. James Keith & Blackman Co., Ltd., 27, Farringdon Avenue, E.C., occupy stand No. 152, wall space. Here are shown Blackman fans of various sizes for ventilating and drying purposes; and the same fans combined with motors, illustrating the company's method of mechanical ventilation. Keith's patent hot-water boiler is exhibited in operation, arranged in connection with radiators, showing combined heating and ventilating. Registers for the admission of fresh cool or warmed air, and for the exit of vitiated air, are also exhibited. The stand is brilliantly lighted by the "Keith" high-pressure light with incandescent gas fittings. Keith's patent automatic cellar pump for draining cellars below the level of the sewers, &c., is another interesting exhibit.

George Wragge, Ltd.

The stand (No. 75, row D) of Messrs. George Wragge, Ltd., of Wardry Works and the Crafts, Chapel Street, Salford, Manchester (London showroom, 211, Shaftesbury Avenue), was specially designed in their own drawing-office. It contains exhibits of painted and leaded glass, gesso work, coloured plaster, repoussé work in metal, specimens of smith's work and electric-light fittings in various metals; whilst a special feature is made of cast-lead work, principally rain-water heads and down-pipes. The work of this firm is essentially modern in treatment; it is, in fact, a commercial expression of the Arts and Crafts movement, which, though it may have given rise to certain strange treatments and phantasies of design, still retained as its characteristic the individualism of the craftsman. In its best phases, as several prominent artists have shown, it is capable of embracing the most delightful work, while carried to ill-regulated extremes—now so popular in Germany—the movement degenerates into a mere vagary. The tendency to follow in these strange though fearful ways is doubtless strong in trade quarters, but we are glad to see Messrs. George Wragge have had the good taste not to do so. Instead, they have engaged artists who appreciate the fact that novelty is not the sole aim even among moderns, and that a studied regard for design is more satisfactory than what some wild persons are pleased to call untrammelled methods.

Frederick Jones & Co.

Messrs. Frederick Jones & Co., of 1A, Perrin Street, Ryland Road, Kentish Town, N.W., the well-known pioneer manufacturers of silicate cotton or slag wool, have a neat and practical exhibit of their various fireproofing and soundproofing specialities at stand No. 44, row B. They give special prominence to their plaster slabs and blocks, a branch of their business which appears to have largely developed during recent years. The fibrous plaster slabs, which constitute a rapid system of plastering, are too well known to require description. Messrs. Frederick Jones & Co. have lately secured the patent rights in this and other countries for what they call the "Hercules" fireproof partition block or slab. The construction of this block is simple, yet very novel, and certainly possesses merits which augur well for its success. By means of projections on the longitudinal edges of the slabs, top and bottom, running half way through the slabs on each side, the construction is rendered immovable, and the entire body made homogenous by a grouting of plaster which is poured down vertical spiral recesses or helices at the ends and at regular distances throughout the blocks. The patentees claim these blocks to be made of specially-selected light non-conducting fireproof plastic compositions, and their samples seem to bear out the claims made for them. The firm has also lately introduced and protected glass-faced plaster bricks, and a small piece of partition constructed with them is shown on the stand. These bricks can be made in any colour and have a very smooth surface. No jointing is required, as they are held in position by means of a grouting of plaster poured down circular vertical channels in the middle of the bricks.

The Simplex Steel Conduit Co., Ltd.

Stand No. 50, row B, is occupied by the Simplex Steel Conduit Co., Ltd., of 80, Digbeth, Birmingham; "Westinghouse Building," Norfolk Street, London, W.C.; and 1, Peel Street, Manchester. This is an exhibit of enamelled, galvanized and brass-cased conduit and fittings for the electric wiring of buildings, outhouses, &c., in which the wires are placed in positions where moisture is nearly always present, and where damage is likely to be caused either by mechanical or physical means. The system, which has been thoroughly brought up to date and standardized, is a method by which the wires of an electric installation are completely protected by the steel conduit and fittings. It supersedes the old method of wood casing, and can be erected with less labour; the first cost compares favourably with the wood system. The conduits are arranged for screwed or socket junctions. There are about eight grades of them and 1,000 fittings, comprising couplings, normal and sharp bends, tees, inspection bends and tees, branching, intersection and tee-jointing boxes, switch and ceiling-rose boxes, distribution switch and fuse boards, &c. The stand is built up of the conduits, with a five-way distribution fuse-board of the company's make in front. The tubes connected with the outlets of this case rise vertically, and then join a run of tube from the back in each case, thus forming five rows of tube to which the company's ceiling rose, pendant and lampholder fittings are connected. The back part of the stand has a roof of woodwork mounted on a tube framework, which also carries a show-case containing the most improved and up-to-date fittings for use with the system.

The British Compoboard Co., Ltd.

The stand of The British Compoboard Co., Ltd. (No. 63, row C) is designed to show the usefulness of their material for ceilings, partitions, walls, &c. It is a little cheaper than lath and plaster, is much quicker to erect and cover; besides which it can be papered, painted, distempered, covered with Lincrusta, Anaglypta, or otherwise treated immediately it is fixed. Compoboard is made of wooden slats 4ft. long and 1in. wide, joined in an endless web: the 4ft. length forms the width of the complete board, so that in a long board—say 4ft. by 9ft.—the end grain of the wood is on the longer edge. The price for the medium quality, single, $\frac{9}{32}$in., is 2d.; for the same quality, double, $\frac{3}{8}$in., 3d. per sq. ft.; and for the heavy quality, double, $\frac{7}{16}$in., $3\frac{3}{8}$d. The offices of the firm are at 18, Roscoe Street, Golden Lane, E.C., and their factory is at Willesden Green.

George Jennings, Ltd.

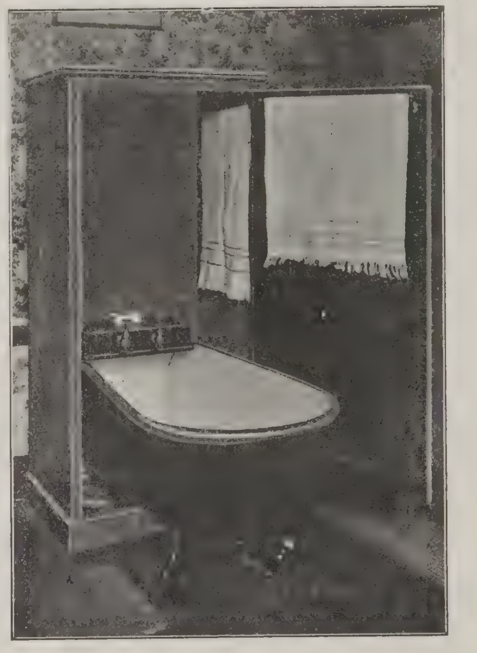
The perfection of sanitary appliances is one of the characteristics of our times, and it is impossible to over-appreciate the good which we derive from those sanitarians and manufacturers who have devoted their lives to the subject. The latest improved forms of these appliances are to be seen on the stand of Messrs. George Jennings, Ltd., of Lambeth Palace Road, S.E. (No. 71, row D). On one side of the stand are many varieties of sanitary goods, such as stoneware gulleys, inspection bends, &c., while on the other are numerous baths, lavatory basins, closets, &c. The baths and lavatories are fitted with a patent duplex valve, a very neat arrangement having a winged lever with a pointer that travels over a dial—allowing hot or cold, or any mixture of both, to enter—the outlet being controlled by another small thumb-lever at the back of the valve. Baths with combined hot, cold, sitz, wave and shower supply are exhibited; also the "Closet of the Century," a range of three isolation latrines operated by a 10-gal. cistern, the "Hyback" pedestal closet (designed for slops as well as ordinary use), the "Deep Seal" closet, the "Oxford" and the "Cambridge" urinals, three latrines as supplied to the War Office, a valveless cistern and a hospital sink. The closets are in earthenware, white ware and fireclay. They are finished in various styles, some being quite plain and others having the metal cistern encased in an earthenware body with plated fall pipe.

Maughan's Patent Geyser Co., Ltd.

The convenience which geysers afford in providing hot water for baths and other purposes with little trouble continues to be appreciated. At stands 30 and 31, row A, several varieties of these appliances are shown by Maughan's Patent Geyser Co., Ltd., of Holywell Row, Worship Street, E.C. The "New Maughan" geyser provides an immediate supply of hot water by simply turning on the cold water and lighting the gas—the water is taken into the open spout of the geyser from cistern or main through any pattern tap, thus avoiding objections from water companies. There are no tubes, chambers or other confined spaces in the interior, and the fact that no accident has happened through these geysers during the thirty years they have been before the public proves their safety and durability—the geyser, indeed, is not affected by the "fur" of hard water nor by frost, and cannot possibly burst. Upwards of 15,000 of them have been sold. The consumption of gas in heating a 30-gal. bath is 20 cub. ft. (costing about $\frac{3}{4}$d.). The "Maughan" auto-geyser is an adaptation of the older pattern. It can be fitted in any part of the house above the taps to be supplied, and is absolutely automatic in action. When hot water is required it is only necessary to turn on any tap—whether over bath, lavatory or kitchen sink, and the auto-geyser at once starts, supplying hot water until the tap is closed, when the cold water and gas supplies automatically shut off. The "Teba" auto-geyser is another form on the same principles. One of these has been supplied at Windsor Castle for the King's bath. Baths and geysers, complete and oil geysers, are also made by this firm.

The Ellkay Patent Bath Syndicate, Ltd.

Stands No. 1 and 2 are occupied by the Ellkay Patent Bath Syndicate, Ltd., Orchard Street, Victoria Street, S.W. The Ellkay bath has been specially designed to meet the need for a full-sized plunge bath, having hot and cold water, which might be fixed in a bedroom or elsewhere without being unsightly. From the accompanying illustrations it will be seen that the bath is contained in a cabinet which, with its mirror front, forms an attractive piece of furniture, the woodwork being made to match the rest of the room. The bath is counterpoised so that it can easily be lifted back within the cabinet, a safety sink being provided to take away any water left in the bath and the drip from the taps. The bath can also be supplied with a fixed washstand (with water and waste attachment), or with a spring mattress to fix on top, forming a single bed for emergency use. Geysers can also be fitted in place of the ordinary supply. The bath can be used in any recess of a minimum width of 2ft. 6in., a depth of 2ft. (which allows the door to be fixed flush with the wall) and 6ft. high. The prices vary from £12 upwards. Ellkay baths with dwarf cabinets are also supplied from £10. The baths are themselves made of the best steel lead coated, with a large overflow and waste and an efficient trap.



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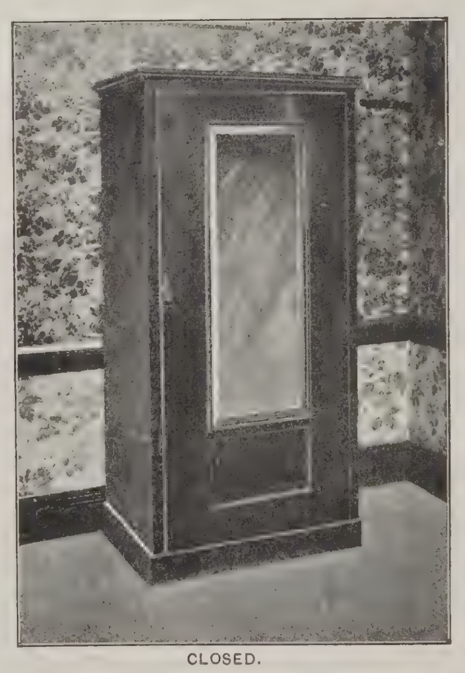


CLOSED.

J. A. King & Co.

One of the most interesting and instructive stands in the hall is undoubtedly No. 81, row D—that of Messrs. J. A. King & Co., who are exhibiting their "Mack" patent fire- and sound-proof slabs and blocks. It should be especially noted that these slabs have been proved conclusively to stand the most intense heat, for they have withstood the most severe test made with partitions by the British Fire Prevention Committee. The "Mack" slabs are made of a special gypsum plaster and have hollow reeds embedded therein, thus forming air-chambers which make them more soundproof; moreover they strengthen the slabs and enable them to be sawn and nailed like boards. Fireproof partitions may be fixed of almost any lengths without intermediate supports with the 2in., $2\frac{3}{4}$in. and 4in. (hollow) slabs, which are 12in. wide and 6ft. long. The slabs are built up like brickwork with break joints and finished with a coat of plaster. Two-inch vertical hollow blocks are also made which require no finishing coat. Slab lintels are used for floors resting on iron joists. Special blocks are made for pugging between wood joists. The ceiling and lining slabs are 12in. wide, 4ft. 8in. long and $\frac{3}{5}$in., $\frac{4}{5}$in., 1in. and $1\frac{1}{4}$in. thick; they merely require to be nailed to the joists and floated and set with plaster. The firm are also supplying their new "Mack" patent fireproof lathing, which contains no metal work and therefore cannot rust. It is used for encasing columns, stanchions, iron and wood beams, coves, domes, ceilings, &c. Messrs. King's address is 181, Queen Victoria Street, E.C.

Stanley Brothers, Ltd.

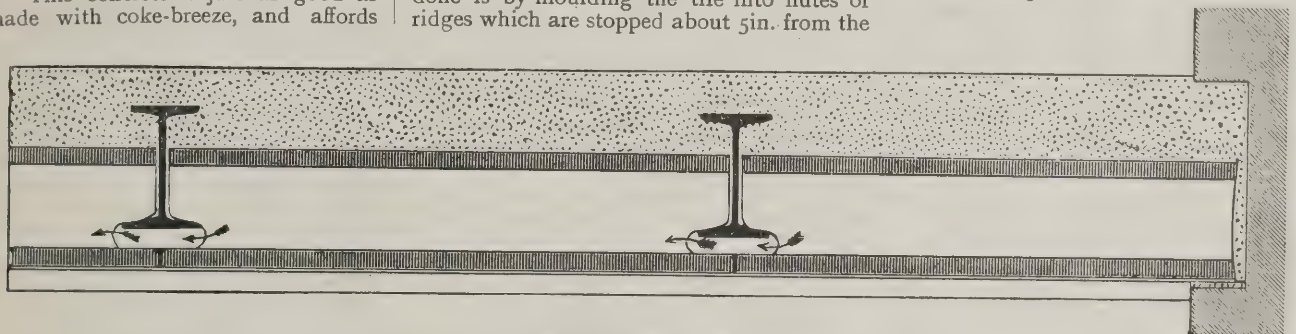
Messrs. Stanley Brothers, Ltd., of Nuneaton, have an interesting stand in row D, No. 82, where this well-known firm, whose reputation is a guarantee of uniform good quality, show samples of brown, grey granite, white and coloured glazed bricks; brown and amber glazed sinks; glazed socket pipes and connections; red and buff terra-cotta; red, buff and salt-glazed chimney pots; plain and ornamental roofing tiles; semi-encaustic paving tiles; plain and ornamental red and blue ridges, finials and ventilators; blue pressed bricks, copings, garden tiles and ventilating bricks; red, blue and buff Staffordshire quarries; glazed and unglazed malt-kiln tiles; and stoneware conduits, troughing, &c.

Joseph Place & Sons, Ltd.

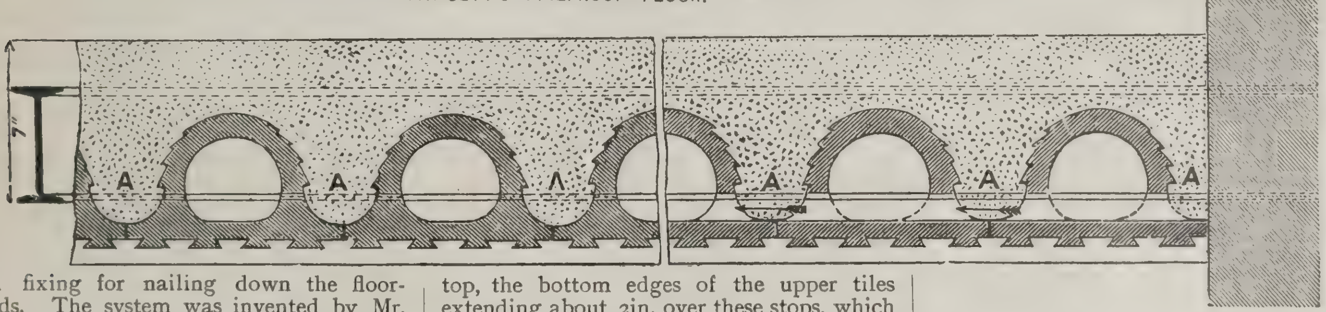
At stand No. 95, row E, Messrs. Joseph Place & Sons, Ltd., of Darwen, exhibit their salt-glazed and enamelled bricks and patent chequer bricks for downdraught kiln bottoms. The latter have increased strength, prevent rubbish lodging on the supporting walls or between the chequers, allow a 4in. pipe to stand anywhere with free draught, tie the supporting walls together and prevent lateral movement, and enable any broken or damaged chequers to be lifted out at any time and replaced without disturbing the rest.

Mark Fawcett & Co.

Stand No. 150, wall space, is occupied by Messrs. Mark Fawcett & Co., of 50, Queen Anne's Gate, Westminster, S.W. Here is shown a full-size specimen of the Fawcett fireproof floor about 20ft. square, with samples of the materials of which it is constructed. This floor is formed with steel joists, spaced at distances of 2ft. centre to centre, with hollow lintels between. These lintels are made of hard-burnt red chimney-pot earth, and, as will be seen from the illustration below, are practically semi-circular in section, with keys for the concrete which is filled in above them and for the plaster ceiling below. The lintels are slotted at each end to fit on to the lower flanges of the joists, but it is specially important to note the continuous air-space which is left under these flanges; thus, longitudinally and transversely the floor is thoroughly ventilated. The concrete used consists of the ash and clinker from steam boilers, which is first passed through a riddle and then mixed with Portland cement. This concrete is just as good as that made with coke-breeze, and affords good fixing for nailing down the floorboards. The system was invented by Mr. Mark Fawcett in 1888, since when it has been very extensively employed for Government and other buildings, both in this country and America.



FAWCETT'S FIREPROOF FLOOR.



Vulcanite, Ltd.

Vulcanite is now so established a material that there is little need to describe it; but the stand—No. 19, row A—of the firm is especially interesting for the model of a Vulcanite roof in course of being laid. The material can be used for flat roofs of wood or concrete construction, and for tanks, reservoirs, &c. It is perfectly waterproof and also fireproof, which makes it of the greatest use to builders and engineers. Vulcanite sheet asphalt for roofing sheds, farm buildings, brick kilns, &c., and for damp-courses, is also shown on the stand. The London offices of the firm are at 118, Cannon Street, and their works at Old Ford, E., and Belfast. Vulcanite roofing has now been used in this country for about seven years, during which time the company have covered roofs of ratable property of all classes to the area of about 8,000,000 sup. ft. with the most satisfactory results. The company are prepared to give a written guarantee for thirty years on all roofs prepared according to their instructions for a long period. Vulcanite is essentially a flat roofing. It can be walked upon, and has the additional advantage that it will give with any settlement of the building, and will withstand the expansion and contraction always taking place, especially between iron and concrete, which is so often the cause of an asphalted roof leaking. Vulcanite roofing may be laid either on wooden joists with 1in. boarding over, or on concrete. A roof of wood construction covered with Vulcanite roofing is thoroughly fire-resisting. In no case where a fire has occurred in a building covered by the company has the roof fallen through.

Watson, Nelson, Ltd.

At the stand of Messrs. Watson, Nelson, Ltd. (No. 86, row E) there are shown examples of the new patent fluted faced tiles this firm is manufacturing. As is well known, in wet windy weather rain is driven up under the tiles on roofs, particularly those which are of no more than a square pitch, and finds its way to the bedding mortar, through which it penetrates to the inside, rotting the laths and frequently dropping inside. This patent tile is designed to prevent this. The means by which this is done is by moulding the tile into flutes or ridges which are stopped about 5in. from the top, the bottom edges of the upper tiles extending about 2in. over these stops, which prevent the rain being driven further up the tile. At the same time the flutes ensure the rain being equally distributed over the surface, and provide a ready means for its downflow. Where roofs abut against a wall the fluted tiles will also form a good key for cement filleting.

James Hunt.

At stand No. 29, row A, Mr. James Hunt, 86, Herbert Street, New North Road, N., exhibits his patent scaffold fixer. This consists simply of a metal clamp and a chain. It is most effective in binding the poles together. The clamp fits against the upright pole just beneath the ledger. The chain is hooked to the clamp at one end and passes around the pole to attach to a screwed hook bolt at the front. There is nothing to go wrong and adjustment with the nut is easy. Builders should look at it.

Joseph Arnold.

At stand No. 110, row F, Mr. Joseph Arnold, 32, St. Paul's Road, Camden Town, N.W., shows sand for general building construction, cement work, plastering, brickmaking, water and sewage filtration, glass-making, marble polishing and horticultural purposes. Mr. Arnold's special Leighton Buzzard and Flitwick building sands are of approved qualities, coming from his extensive and excellent pits (which are 200 acres in extent). The sand for filter work is obtainable coarse or fine, either as raised or prepared to engineers' requirements. These are now widely known and recommended by eminent analysts and engineers; they are free from soluble or other objectionable matter.

Ewart & Son, Ltd.

Messrs. Ewart & Son, Ltd., of 346, 348 and 350, Euston Road, N.W., exhibit their patent geysers at stand No. 21, row A. The "Lightning" geyser has long since established itself. The firm now make a geyser for mineral oil which heats the water almost as fast as gas. These geysers are made entirely of copper and are fitted with burners that swing out for lighting, so avoiding any risk of explosion; they also have a patent "Dual" tap, which prevents accidents from burning. Ewart's "Acme" geyser stands on its own legs, and enables hot water to be drawn on either side, for bath or lavatory basin, besides providing a shower. The "Champion" geyser is specially constructed to work without water-pressure, but though well adapted for bathing and cleaning, is not suited for domestic purposes, as the water is not sealed from contact with the gas fumes, as in the "Lightning." The "Royal" and "Surprise" are other geysers made by Messrs. Ewart. The "Auto-Universal" and "Califont" patterns are for hot-water supply under pressure, so that a complete system may be served, while still another pattern is the "Lightning" boiler—providing boiling water in large quantities, so that it is specially suited to hotels, &c.

H. Blacknell.

Mr. H. Blacknell, of Fleet, Hants, occupies stand No. 22, row A, where he exhibits crowding and bearing-off barrows, hack caps, pallet boards for hack and steam-driers, loo boards, seed and postal boxes, and all kinds of nursery trays and sample boxes.

Rhodes's Patent Sash Hanging Co.

At stand No. 99, row E, the Rhodes' Patent Sash Hanging Co., of Fairholt Road, Stoke Newington, N., exhibit a new substitute for the ordinary inefficient smoothe grooved pulleys worked by sash cords, chains and wires. Their invention enables the largest and heaviest sashes to be opened and closed with the greatest ease and certainty. The hangings consist of teeth pulleys and steel chains, and are fixed to the sash and window frame in the usual way. The chains, of the finest hardened steel, are chemically treated to prevent rusting.

The "Warrington" Bond-Iron Syndicate.

The "Warrington" Bond-Iron Syndicate, Ltd., of 8, Brewery Street, Downing Street, Manchester, exhibit their patent tie at stand No. 45, row B. There are three varieties of this—one of twisted round wire for cavity work, a tie for solid work, and a special flat tie which can be used either for cavity or solid work. The advantages claimed for this bond-iron are that the greatest possible strength is combined with the least amount of material, that it is very cheap, that it does not form any obstruction in the cavity for mortar and other matters to lodge upon, that it cannot hold or convey damp, and that it obviates the necessity for through headers in faced walling: moreover, the tie does not require the cutting or clipping of bricks, as it can be bent to fit into the courses and thus effects a great saving of labour. The tie for solid work is made in 12's wire for stock or other fine-jointed facing, and in 10's wire for common work and outside walling. It is coated with a special protective against oxidation. These ties have been supplied to H.M. Ordnance Building Department, and are specified by architects and employed by builders throughout the country. Upwards of five millions of them have already been used.

Columbian Fireproofing Co., Ltd.

All those who are interested in fireproof construction will no doubt take particular note of the stand (No. 55, row C) of The Columbian Fireproofing Co., of 37, King William Street, E.C. In the "Columbian" system of fireproof floors steel bars from 1in. to $2\frac{1}{2}$in. deep are suspended from steel stirrups that hang over the joists; $3\frac{1}{2}$in., 4in. and 5in. heavy ribbed bars are put between main girders or resting on walls, and thus the use of ordinary steel joists is eliminated. In panelled floors all the joists and main girders are completely encased with concrete and the underside protected by slabs secured with concealed anchors, in spans up to 8ft., using 2in. and $2\frac{1}{2}$in ribbed bars hung in stirrups to carry from 4 cwt. to 12 cwt. The double form of construction is similar, except that the bars are laid on the lower flange of the joists and a wooden centering placed below to receive a $2\frac{1}{2}$in. concrete ceiling. Columns are encased with not less than 2in. of concrete. The company prepares plans for floors on their system free of charge. They have just had completed new constructional works at St. John's Wood, where the latest machinery has been installed.

C. Chancellor & Co.

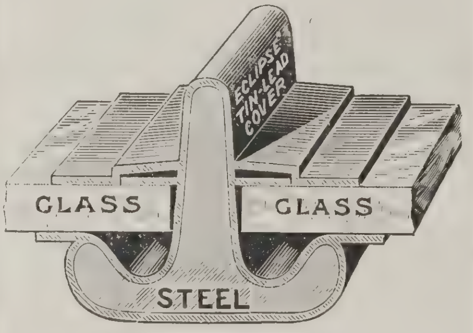
Messrs. C. Chancellor & Co., of 13, Clerkenwell Road, E.C., exhibit their well-known "Velure" and "Stripso" at stand No. 14, row A. "Velure"—which is a new and perfected Japan paint intended to supersede varnish, with remarkable spreading, elastic and weather-resisting properties—appears to be making rapid headway. Amongst other important places where it has been used are Windsor Castle, the King's estate at Sandringham, and several of the most important hospitals, *i.e.*, the London Hospital, Middlesex Hospital, Metropolitan Hospital, &c., as well as a large number of municipal and other public buildings, hotels, &c. The makers claim that owing to its elasticity "Velure" is not only the most perfect in colour and surface, but the most durable paint extant, and they invite consumers to put it to the most severe tests, particularly to tests which other paints have failed to answer. One coat equals two coats of ordinary paint and one of varnish. It is supplied in 120 colours, is washable, and will not crack, chip, peel, blister or fade. "Stripso" is a paint-remover. It is spread over the surface, left for a short time, then washed off with clean water. Either fresh- or sea-water is equally good for the purpose. The material has been largely used for yachts.

The Offa Ventilating Co.

The exhibit of the Offa Ventilating Co., of 64, Basinghall Street, London, E.C., at stand No. 13, row A, consists of the various types of their ventilators, including a new one especially introduced for hospitals and infirmaries, having an iron face-plate and centre handle. They also exhibit a working model showing the action of the "Offa" ventilators in distributing the air entering a room so that no draught can be felt. These ventilators possess the further advantage of being absolutely sanitary, having no projections to hold dust or germs, thus being especially suitable for hospitals, &c. The price of the No. 1 pattern for hospitals, with iron-face plate, is 10s. 6d. nett each.

Mellowes & Co.

Messrs. Mellowes & Co., of Corporation Street, Sheffield, and 28, Victoria Street, Westminster, S.W., exhibit at stand No. 58, row C, a wooden structure entirely glazed on their patent "Eclipse" system. The bars which support the glass are of steel encased with strong tin-lead metal, with webs on either side which are rubbed down on to the glass (see accompanying illustration). No putty or packing is required; no maintenance is necessary; and ample allowance is made for contraction and expansion. As the result of twenty years' experience of their tin-lead fixed in Sheffield, Woolwich and Manchester (probably three of the worst places as regards smoke, chemicals and atmospheric conditions that could be selected) Messrs. Mellowes claim that it is imperishable, that it is not "drawn" by the sun, and is entirely unaffected by atmospheric action. It is adapted to wood bars as well as to steel, and, unlike copper or zinc, "beds" close on to the glass, so keeping out all dirt and dust. A copper or lead guard is provided which, whilst allowing for the outlet of steam and for ventilation, prevents snow or rain drifting through. Millions of superficial feet of roofing have been glazed on this system in many of the most important buildings throughout the kingdom.



MELLOWES' PATENT GLAZING.

Cloisonne Glass Co.

The Cloisonne Glass Co., 66, Berners Street, Oxford Street, W., have a most attractive stand (No. 59, row C)—of white painted "Veronese" plaster in Georgian style. The windows are filled in with pleasing designs in Cloisonne glass, while inside are eight lanterns and other fittings (by the Electrical Fittings Co.) also fitted with this new decorative glass. The glass can, of course, be used for any purposes where ordinary glass is applicable. It is made at Islington only, and in the following manner:—The design is first traced on paper. A sheet of plain glass is then laid over it, and a length of wire put to the contours of the main lines. The wire is next cemented in place, after which powdered glass—in specially prepared globules—is filled in the spaces level with the top of the wire. This filling is then cemented together and a sheet of plain glass fixed on top, the whole bound together at the edges with lead. In this way a very distinctive and pleasant effect is obtained.

B. Ward & Co., Ltd.

Messrs. B. Ward & Co., Ltd., concrete, mosaic and wood-block specialists, of 38 & 39, Parliament Street, S.W., have an interesting exhibit at stand 80, row D. Their granite-concrete paving laid *in situ*, grooved for foothold and with channels formed in the surface for draining, has long been recognized by the War Office and other experts as being the most durable, sanitary and easily-cleansed stable paving. It is laid by the firm *in situ* on a brick bed provided and put in by the builder, and, besides being agreeable in appearance and colour, can be tinted either buff or red as desired to the gangways or the open yards. Any material laid down in the form of bricks is liable to get kicked loose and to allow the urine to percolate through the joints, generating ammonia and injuring the health of the animals. In connection with their stable paving, Messrs. Ward have designed and manufactured special stable pots, interceptors and yard gulleys, which are simple in construction, strong, efficient and easily fixed. The concrete paving laid by the firm is suitable for cowhouses, dairies, kitchens, cellars, &c.; it can be put down rapidly and inexpensively by Messrs. Ward's staff of experienced layers. Special attention has been given by this firm to the designing of fireproof floors of maximum strength with the minimum of heavy and unnecessary steelwork. Their floors can be executed with either flat or curved soffits, and are finished on top with their granite-concrete paving, or screeded for wood-block flooring or mosaic. Messrs. Ward are always willing to submit steelwork schemes for approval on receipt of particulars as to span, &c. They are now the sole proprietors and manufacturers of Charteris & Longley's patent perfected wood-flooring blocks, which have no loose dowels to be left out by careless or inefficient workmen, and give a great wearing depth. All such floors are laid in special mastic composition, and the firm guarantee that the blocks are prepared at their own mills from the best material after treatment by their Shapland process of seasoning, which leaves the timber sound instead of deteriorating it, as in ordinary dessication. A number of samples of parquet flooring are shown on the stand, as well as mosaic paving, which is laid by the firm's own special workmen in Roman and Venetian marble mosaic. This mosaic work, combined with concrete for staircases, is also largely used. In constructing concrete staircases, both *in situ* and at their workshops, Messrs. Ward have had a large experience, and have recently, amongst other important works, executed those at the New Baltic Shipping Exchange, St. Mary Axe, E.C., and Thanet and Temple Bar Houses, Fleet Street. These staircases are formed with the firm's artificial stone steps and landings, faced with Venetian marble mosaic, and fitted with patent leaded treads; the result is a handsome and durable staircase. Messrs. Ward & Co.'s new patent treads, which they claim to be the simplest and most effective and economical on the market, have the special advantage of being made in the form of a lead grid, the lead dots which give the foothold being finished flush with the tread of the steps, so that they offer no raised or sunk surfaces to harbour dirt.

John Tann.

Mr. John Tann, lock and safe engineer, of 11, Newgate Street, E.C., and Reliance Works, St. Stephen's Road, Old Ford Road, E., who occupies stands Nos. 153 and 154, wall space, is the sole patentee and manufacturer of the well-known "Anchor Reliance" safes, which are his speciality. These are made of bent steel plates without joints at the corners, with immovable flanged backs, and are fire- and burglar-proof. Various kinds of safes are shown on this stand, such as for dwelling-houses, commercial purposes, for keeping jewels and cash, and also special thief-resisting plate closets. There are also exhibited iron and steel doors for all purposes, fire-resisting warehouse doors having a chamber packed with fire-proof composition, party-wall doors, insurance or tariff doors to meet the insurance companies' requirements; sliding party-wall, plate-closet and strong-room doors; combined strong-room doors and gates; and bankers' fire-, burglar- and drill-proof doors with steel vestibule.

J. Sagar & Co., Ltd.

In view of the revolution in the science of joinery which has occurred in modern times by the use of machinery, everyone connected with the building trade will be greatly interested in the exhibit of Messrs. J. Sagar & Co., Ltd., saw-mill engineers, of Canal Works, Halifax, at stand No. 137, wall space. There are three special machines which show the high pitch of excellence wood-working machines have now reached—the "Premier" hand- and roller-feed surface planing, moulding and thicknessing machine; a mortising and boring machine; and an improved tenoning machine. The firm also exhibit vertical-spindle moulding, band-sawing, cutter, grinding and various planing machines, and a four-cutter moulding and planing machine.

Walter P. Notcutt.

At stand No. 61, row C, is to be found the exhibit of Mr. Walter P. Notcutt, whose offices and showrooms are at 19 & 20, Holborn Viaduct, London, E.C. Mr. Notcutt is the British representative for the Bommer spring hinges and the Simonds Manufacturing Co., of Fitchburg, Mass., U.S.A. The Bommer spring hinges are manufactured entirely of wrought metal, and are claimed to be absolutely unbreakable. They are well made in polished brass, brass plated, japanned steel and a variety of other finishes suitable to any scheme of decoration. The tension being readily adjustable, the door can be made to close as softly or quickly as desired. They are as easily fixed as an ordinary pair of butt hinges, and for this purpose the tension can be entirely taken off. Bommer hinges are made for both single- and double-acting doors. The Simonds Manufacturing Co. are makers of every variety of high-grade machine knives for planing, moulding, &c. Mr. Notcutt shows also a complete line of saws, including inserted point and solid tooth circular, band, cross-cut, hand and mill saws.

T. Wragg & Sons, Ltd.

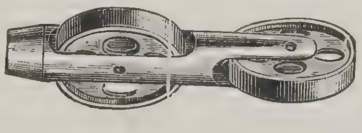
A large number of pipes, gulleys, &c., are shown at stand No. 69, row C, by Messrs. T. Wragg & Sons, Ltd., of Swadlincote. This firm makes a speciality of patent pipes—Hassall's single- and double-lined, Stanford's, the "Spiralitic" and Wakefield's corrugated socket, as well as patent gulleys, joinders, inspection interceptors, blocks for manholes, locking stoppers, disconnecting syphons, junction and invert blocks, Merril's patent trough closet and Monk's patent chimney pot. Each pipe is tested up to 20lbs. to 30lbs. per sq. in. Bricks, copings, tiles, &c., are also made by the firm.

R. H. Mudd & Co.

At stand No. 119, row F, Messrs. R. H. Mudd & Co., of Hogarth Engine Works, Chiswick, W., are exhibiting Faija's patent cement-testing plant, of which they are the sole manufacturers. The cement-testing machine is extremely simple in working parts. The Faija apparatus also includes nests of moulds for coating briquettes, a cement gauger that ensures better and more regular results than by gauging by hand, a hopper for determining the weight per bushel of cement, sieves of various-sized meshes, and an apparatus for determining the soundness of cement in a few hours. This last is known as the boiling test, and is based on the principle that moist heat accelerates the setting of cement, and that if judiciously applied an age of several days may be artificially given to a cement in a few hours. A sound cement acquires great hardness in a short time when treated in this apparatus, but an unsound one, or one that would under ordinary conditions "blow" when used in working, is caused to develop this characteristic in a few hours.

H. Hart.

Stand No. 12, row A, is occupied by Mr. H. Hart, 29, Settles Street, Commercial Road, E., maker of chimney and drain-cleaning apparatus. These include machines composed of malacca canes, fitted with interchangeable brass connections, in lengths varying from 2ft. to 4ft., and improved top with expanding drain stoppers and drain-cleansing tools of all descriptions. Stout ash sewer rods, with shovels and scoops to connect to them, are also shown.



Clark, Hunt & Co.

The exhibit of Messrs. Clark, Hunt & Co., of 159-60, Shoreditch, E., the noted builders, ironmongers, &c., at their stands in bay No. 11, and wall space No. 142, includes the "Caterer" restaurant range and steam-cooker, and "Bailey's" patent geyser-boiler range (both in action); the "Middlesex" kitcheners, which are made in either a portable form or to fix; "Francombe's" warm-air slow combustion stove; the "Nautilus" grate, with mantel registers, two wood mantels and two marble chimneypieces. They are also showing brickmoulds; builders' and engineers' tools; pulleys and shafting; brass door-furniture; and electric light and bell fittings.

Julius Hulsen & Co.

Mr. Julius Hülsen & Co., of Collingwood Buildings, Collingwood Street, Newcastle-on-Tyne, show at stand No. 93, row E, specimens of their precipitated carbonate of barytes for the prevention of scum and discoloration on facing bricks, terra-cotta, tiles, &c. Scumming is chiefly caused by soluble salts in the clay and in the water used for tempering it. These salts, by the combined action of water and heat, are driven to the surface of the brick. By adding precipitated carbonate of barytes (a creamy liquid) to the clay the composition of whatever soluble gypsum and scum may be in it is so changed as to be harmless; and the surface of the brick or tile is thus kept unblemished. Duplicate samples made from the same seams of clay, with and without the barytes, are shown on the stand.

Cobbetts.

Messrs. Cobbetts, of Virginia Road, Bethnal Green, E., exhibit at stand No. 130, wall space, specimens of American hardwoods, mahogany for shop-fitting purposes, oak and maple flooring; also specialities in square- and round-turned balusters and newels, machine-carved mouldings, whitewood and mahogany for fascia boards and counter top, &c. Goods to the value of £5 and upwards are delivered free by the firm anywhere in London.

Moore's Patents Co., Ltd.

Reversible windows are shown at special position No. 5, row F, by Moore's Patents Co., Ltd., of Nightingale Hall, Lower Edmonton, London, N. The sashes in Moore's, patent window are hinged when at the bottom, and then a person, by turning a button, can bring them inside on their hinges for cleaning, &c. The frames are now made the same as ordinary frames, or the fixed frame may be solid on the opening side. The invention is also applicable to existing windows. Moore's patent casement windows open outwards and have an angle-iron water-bar on the head and sill on which the sash slides, making it perfectly water-tight. Door-springs and fanlight openers are also shown on the stand.

North Devon Clay Co., Ltd.

The North Devon Clay Co., Ltd., of Torrington, proprietors of the Marland Brick Works, exhibit specimens of their bricks at stand No. 125, row F. Impervious buff facing, vitreous paving, damp- and acid-proof engineering and sewer bricks are made by this firm, all from the Devon stoneware clays—the decomposed detritus from the Dartmoor granite. The valley in which the works are situate (about six miles from Torrington Station, with which the company are connected by a 3ft. gauge light railway) is the only place in North Devon where such a deposit is known to exist.

Emdeca Decorations.

The exhibit of the Emdeca Metal Decoration Co., Ltd., at stand 57, row C, is one of the most attractive in the hall, both as regards the stand itself and the decorative work displayed. The Emdeca decorations are too well and favourably known to need elaborate description. The annual output of these decorations now amounts to over half a million square yards. This shows their great popularity. The patterns exhibited are original and artistic; a fleur-de-lis design on white ground for filling with a self-coloured pattern for dado is noteworthy. A new and interesting feature is an article destined to prove a serious competitor to plaster for ceilings. It is made of 28-gauge Bessemer steel sheet, stamped under great pressure with various ceiling designs. These ceilings can be put on to wood or iron beams, and require no plaster. We marvel how it is possible to produce these goods at a price as cheap as plaster and cheaper than ordinary paper relief decorations. The London offices of the company are at 97, Queen Victoria Street, E.C.

C. E. Johnson.

Stand No. 7 in the gallery, row A, is occupied by Mr. C. E. Johnson, 118, Hoxton Street, N. Here are shown all kinds of timbers used by builders and others, including mahogany, wainscot and American oak, walnut, beech and all descriptions of hardwoods in logs, planks and boards, as well as Kauri, Oregon, pitch- and yellow-pine, oak, teak and pitch-pine flooring for secret nailing, hardwood mouldings and electric-light casings, and lavatory seats.

Sissons Brothers & Co., Ltd.

Special position No, 11‘ row E.—an effective stand with scroll work painted white—is occupied by Messrs. Sissons Brothers & Co., Ltd., Layton's Buildings, 199B, Borough High Street, S.E. A number of partitions finished with paint in various pleasing colours are exhibited, as well as work distempered with Hall's well-known sanitary water paint.

Powers & Deane, Ransomes, Ltd.

Messrs. Powers & Deane, Ransomes, Ltd., Plymouth Wharf, Wharf Road, Cubitt Town, E., exhibit at stand No. 115, row F., the patent "M.P." fire- and sound-proof floor and ceiling, with rolled steel joists, patent tiles, coke-breeze concrete (5 to 1), and finished with Granolithic patent fireproof doors made of two steel stampings only. Specimens of compound steel girders, stanchions and roof trusses are also shown.

Sutcliffe, Speakman & Co., Ltd.

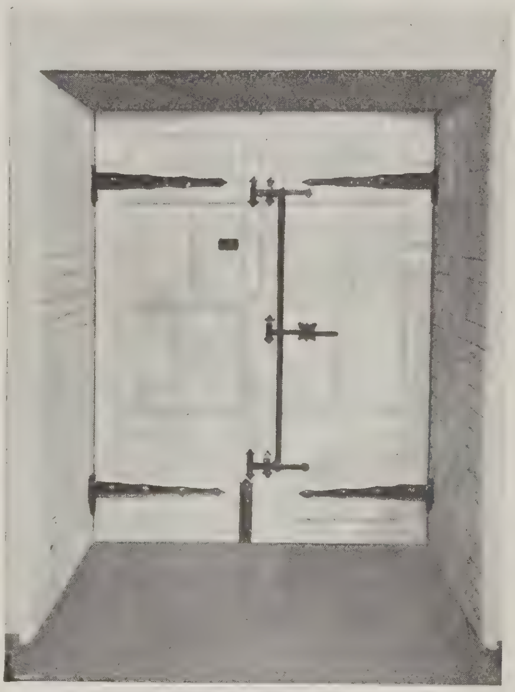
At stand No. 133, wall space, Messrs. Sutcliffe, Speakman & Co., Ltd., of Leigh, Lancs, show their special machinery for making clay bricks, and numerous samples of artificial stone bricks, &c. That which is quite new is their process for making indurated cement-concrete paving flags. This firm are now able to do what has hitherto been impossible, *i.e.*, to manufacture and harden concrete goods of all kinds in a period of only three days. In that short time strengths are obtained which have never been equalled. For instance, in three days they have obtained tensile strengths of 936 lbs. per sq. in. with standard sand and cement 2 to 1. The usual twelve months' test is about 500 lbs. In crushing strength they have obtained in six weeks' time tests of 7·85 tons per sq. in. with 3 to 1 of cement, the aggregate being limestone chips. At this great pressure the test piece was unbroken, the limit of the machine having been reached. Granite stands in compression 4 to 5 tons per sq in. They also show bricks made from gas lime and clinker and from lime and sand, and are manufacturing them in the exhibition. They claim to make clinker and lime bricks equal in strength to Staffordshire bricks.

The Pulsometer Engineering Co., Ltd.

An interesting exhibit at stand No. 41, row B, is that of the Pulsometer Engineering Co., Ltd., of Reading. The Pulsometer pump works as well hanging on the end of a chain as on a solid foundation, and at the stand the method of slinging it for work in foundations, &c., is shown. Stones, sand, &c., that cut the valves of ordinary pumps to pieces have no effect on the "Pulsometer." This company also show a boiler on wheels, carrying a pulsometer attached to its side on a bracket from which it can be detached at a moment's notice. For temporary work the arrangement is one that should be very useful. A working model of an air-lift pump is shown. These pumps are designed to bring up more water than any other form of pumping apparatus from great depths, such as from a bore hole. The company's "Union" pipe shown is of wrought iron fitted with faced malleable flanges with slotted holes for the bolts. The "Caryl" donkey pump is also noticeable. Its working parts are few, thus reducing the liability to derangement to a minimum. The centrifugal pumps, of which one example is shown, allow the side plate of these pumps to be removed and the interior inspected without the necessity of breaking the joints of either suction or discharge pipes. The pumps take in their suction on each side, so that the propeller is always in equilibrium and all unnecessary friction done away with.

The British Uralite Co., Ltd.

The British Uralite Co., Ltd., 50, Cannon Street, E.C., occupy special position No. 3, row D, where samples of their material are exhibited. Uralite is chiefly used for roofing, ceilings, partitions, &c., but it may be employed for many other purposes. On this stand a deed safe and despatch box formed of it are shown, as well as painted, distempered and veneered specimens. Uralite is composed of asbestos fibre, silicate and bicarbonate of soda, together with a small amount of chalk. It is quite fireproof and damp-proof, a good insulator (which makes it valuable for boiler coverings and for cold storage) and weathers well. Some fire tests with the material which were conducted at West Kensington, in the presence of eighty visitors, clearly showed its fire-resisting properties. The test took place in a hut, 11ft. by 6ft. by 7ft. 4in. high to the eaves, constructed partly with six thicknesses of Uralite and two of deal, with upright timber studding, and partly of five thicknesses of Uralite and three of deal, solid, with six fire-resisting doors. Inside 6 cwt. of wood soaked with paraffin was set light. After a considerable time an examination was made, and it was found that the hard and soft Uralite next to the fire were porcelained, while that behind was in good condition, the first layer of wood being somewhat charred: otherwise it was in good order, and the outside of the partitions had never got more than warm to the hand. The armoured doors were similarly satisfactory. The above illustration shows one made by Messrs. Mather & Platt, cased with steel sheets and lined with Uralite.


ARMOURED DOOR LINED WITH URALITE.

Palmer's Travelling Cradle, Ltd.

The utility of such a device as Palmer's well-known travelling cradle can hardly be overestimated, for not only is it a time-saver but it does away with the risk incurred when painting or otherwise working on ladders on the walls or under the roofs of buildings. It is familiar to all persons connected with the building trade, and the fact that it is extensively used all over the kingdom proves how much it is appreciated. It is easy to fix, can be raised or lowered without difficulty, and being a steady platform, gives the workman both hands free to carry out his operations.

Colledge & Bridgen.

Messrs. Colledge & Bridgen, Midlar Works, Wolverhampton, occupy stand No. row A, in the gallery. Here is shown Fisher patent attachment for preventing acciden occurring when windows are being cleane repaired or painted. The fittings consi mainly of pivoted hinges which, while allov ing the sashes to slide up and down in th usual way, also enable them to be opene into the room within the safe reach of anyor standing on the floor. The fittings are mac in malleable iron, sanded brass, polishe brass and gunmetal in sets costir 5s., 7s. 6d., 9s. and 11s. 6d. respectively

Major & Co., Ltd.

The speciality which Messrs. Maj & Co., Ltd., of Sculcoates, Hull, a showing at bay No. 22 in the galle is their wood preservative and stai "Solignum." This preparation com bines the properties of a reliable woo preservative with that of a reddisl brown stain of good appearance. F woodwork going under ground it is mo valuable. "Solignum" is manufacture in three shades of brown. The ligl shade is mostly used for fences, &c., th medium and dark shades for hal timber work. Its appearance is illu trated at this stand on a small mod half-timbered house. The half-timb work is treated with the medium shad of Solignum, while the fence and gat in front are treated with the light shad In response to constant requests for othe colours the firm are introducing wha they term "Solignum B Stains" in re and green shades. These stains ar permanent indoors, but the colours alte on exposure outside. Samples ar shown. The roof of the building, i fact, is treated with the red shade an the door with the green.

The Asbestos and Asbestic Co., Ltd.

At stand No. 85, row E, the Asbesto and Asbestic Co., Ltd., of 27, Billiter Build ings, Billiter Street, E.C., exhibit insulatin materials for cold-storage plants of th special kinds adopted in America by suc firms as Armour & Co., and for the refrigera ting of the great American railroad com panies' cars; magnesia, sponge-felted an other pipe and boiler coverings for high- an low-pressure steam—very practical in thei application; special deafening materials easily fixed and doing away with obsolet methods; and a general line of made-u asbestos goods, such as fire felt, millboar &c.; and, as usual, specimens of thei Danville asbestic fireproof plaster, of suc signal success in a great many large build ings in London, such as the Carlton Hotel the Stock Exchange, the Pall Mall Deposi Co., Basildon House, and other buildings o similar importance, and which has prove in four instances where fires have broken ou to have saved the buildings. The lates thing this firm is introducing into Englan is the keystone hair insulator, which i also exhibited. This enables refrigerating plants to dispense with the great thickness of walls now considered necessary. A furthe and important exhibit is the Manville fir extinguisher (registered), a chemical powde put up in a decorated tube 22in. by $2\frac{1}{2}$in in diameter. The powder will not freez or cake, nor is it affected by damp o deteriorated by age Unlike liquid extinguishers, it will not damage the mos delicate fabric. It is a most effective extinguisher of acetylene and electrical flames which are most difficult to put out with water or other liquids. It should therefore prove of the greatest use to all concerned with buildings.

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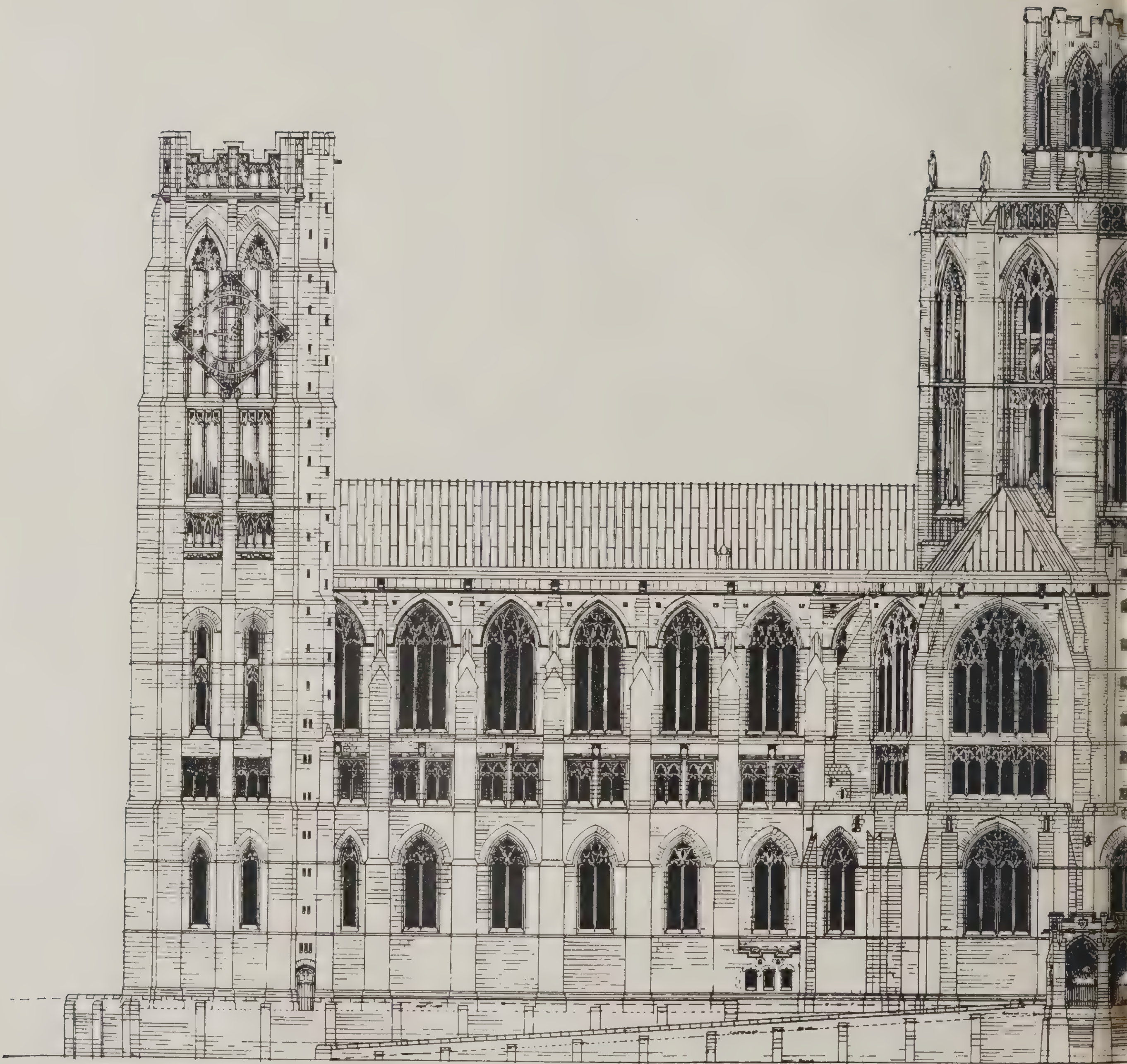
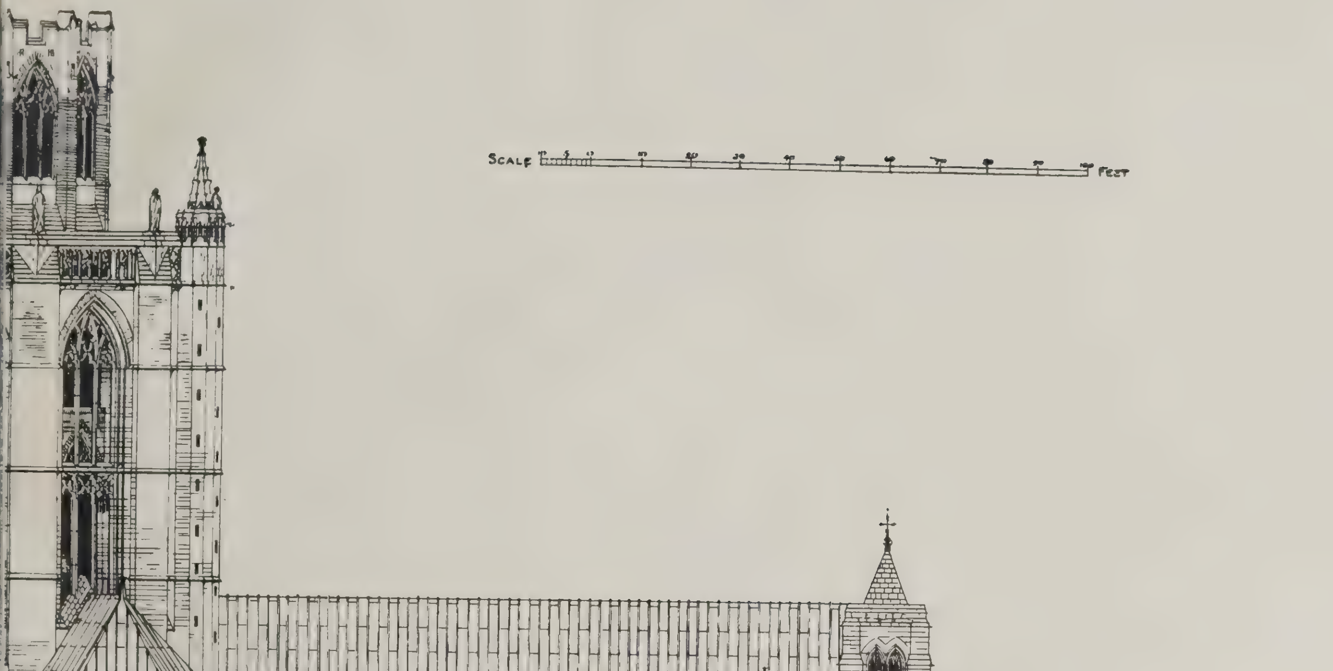
Wednesday, June 17th, 1903.



DESIGN FOR LIVERPOOL CATHEDRAL: ELEVATION TO



AMES'S ROAD. C. A. NICHOLSON, ARCHITECT.

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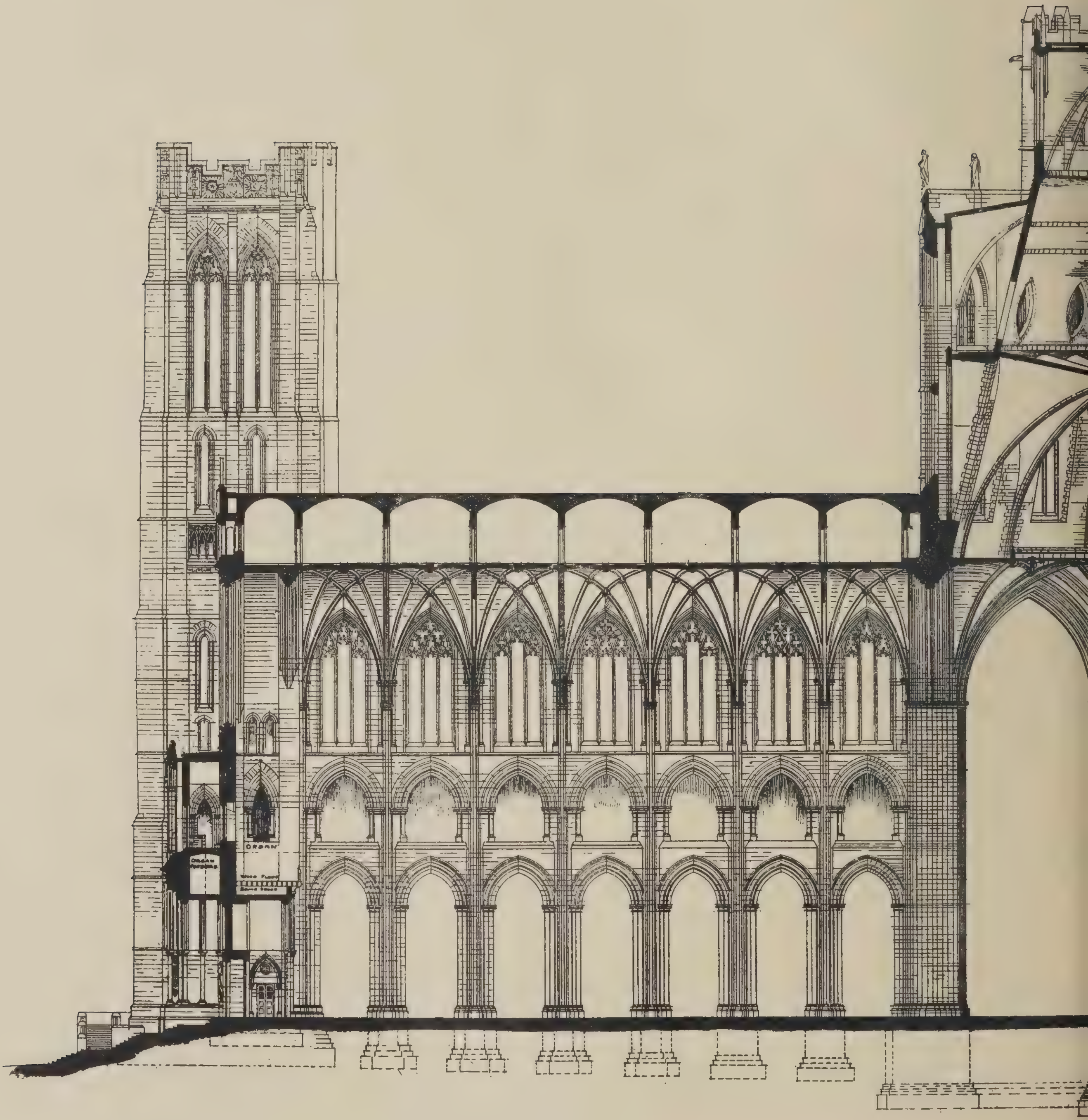

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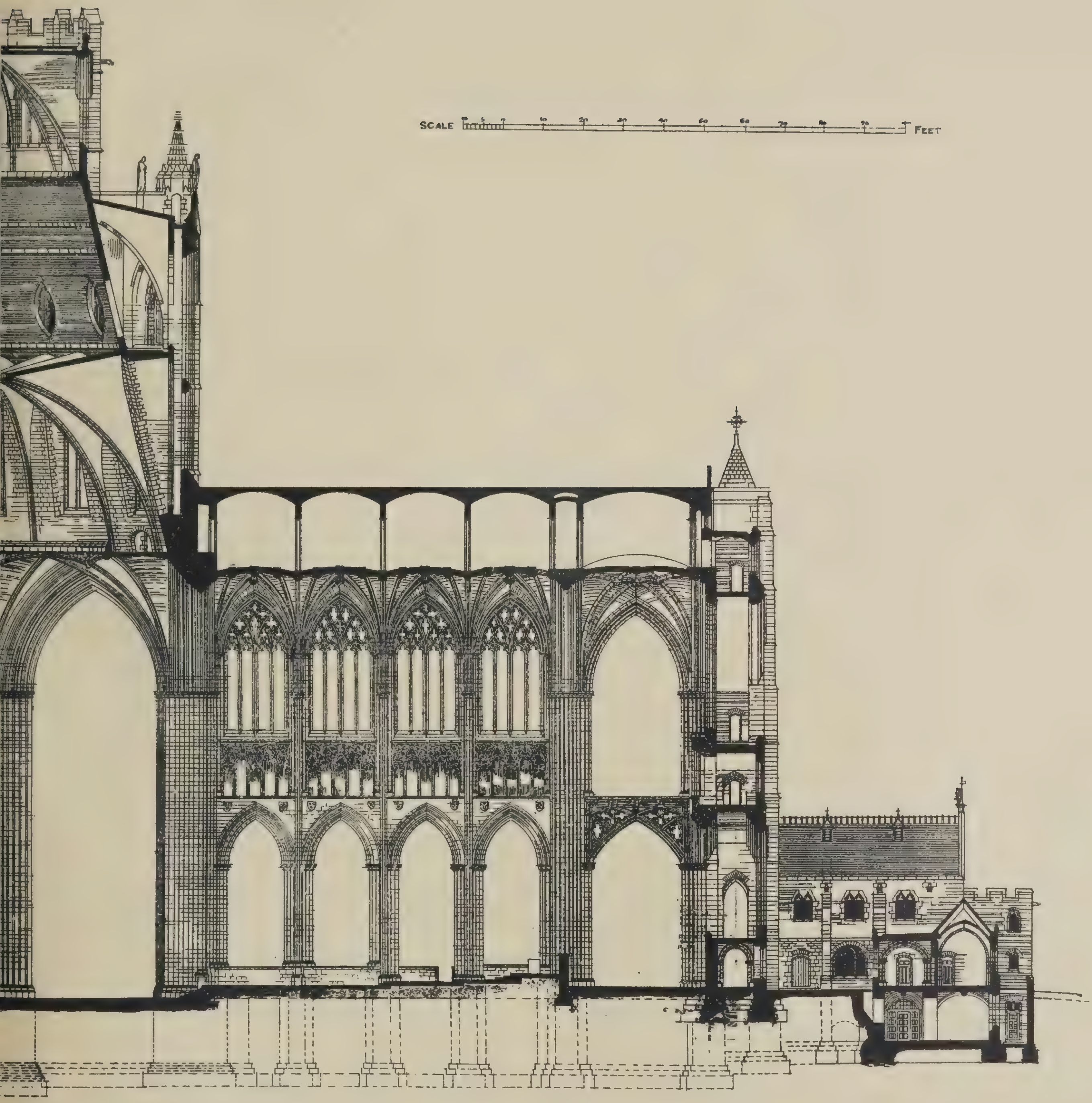

INAL SECTION. C. A. NICHOLSON, ARCHITECT.

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Bratt, Colbran & Co.

At Stand No. 132, wall space, Messrs. Bratt, Colbran & Co., 10, Mortimer Street, W., exhibit wood and iron mantels, dog grates, electric-light fittings, door furniture, &c. Messrs. Bratt, Colbran are also the patentees and makers of the "Heaped" and "Valley" fires, which are shown burning.

H. G. Goodwin & Son.

The exhibits on stand No. 26, row A—Messrs. H. G. Goodwin & Son, 16, Charles Street, Hatton Garden, E.C.—comprise a staircase, front doors, sashes and frames, carved mouldings and overdoors, and compoboard. The firm make every description of oinery and give special attention to architects' designs.

F. A. Fawkes.

An especially pleasing oak mantel with small inlays of brass is shown at stands Nos. 48 & 49, row B, by Mr. F. A. Fawkes, Anchor Works, Chelmsford. The work is straightforward in design and well executed. A white-painted wood mantel and an enriched doorway are also exhibited.

Beaven & Sons.

Messrs. Beaven & Sons, 27, Victoria Street, S.W., exhibit at stand No. 92, row E, a new combined gas cooker and hot-water circuating boiler (Rasch's patent) by which hot water is obtainable throughout the house in ifteen minutes at an average cost of 1d. per hour—a very effective and convenient apparatus.

The Coalbrookdale Co., Ltd.

At stand No. 3 in the arcade the Coalbrookdale Co., Ltd., of 141, Queen Victoria Street, E.C., exhibit the patent "Bostel" grate, the feature of which is that it can be manipulated for the fire to burn either sunk in the hearth or tilted up to burn with he bars raised. When lifted up the grate nduces a quick draught and the fire soon becomes a glowing mass of smokeless fuel; he bars are then lowered, bringing the fire well forward so that practically all its heat s given out into the room, the gases passing up the chimney quite cool.

The Decorative Marmorite Co.

The Decorative Marmorite Co., of 55, Queen Street, Camden Town, N.W., occupy tand No. 66, row C, where they exhibit pecimens of "Marmorite" as adapted to various purposes. This material (which comes from Belgium) is a composition of glass with metal salts, and can be obtained n various tints. It is solid in colour throughout and is specially adapted for fascias, rade tablets, decorative wall-panelling, &c. t has a high and imperishable polish, and has been very largely used on the Continent with great success. It may be obtained plain or decorated, the decoration being carried out by sand-blasting the design and afterwards painting over the parts.

Marmart Co., Ltd.

Messrs. The Marmart Co., Ltd., of 33, Old Queen Street, Westminster, S.W., occupy pecial position No. 6, row B. Here are hown specimens of "Marmart," a new product intended to replace marble, glass or wood for engraved shop-fronts, showplates, and for house, street and general decoration. It is produced in every colour and also veined. The prices are claimed to be lower han those of marble, slate or wood for imilar purposes. The following are the prices for black "Marmart":—With gold lettering, 11s. per ft. sq.; lettering and coloured trade mark, 13s. per sq. ft.; reproduction of coloured show card or with elaborate coloured design, 15s. per sq. ft. Coloured "Marmart" costs 1s. per ft. sq. extra.

Messer & Thorpe.

At stand No. 112, row F, Messrs. Messer & Thorpe, 8, Quality Court, Chancery Lane, W.C., exhibit their patent bucket fire-extinguisher, which has been awarded gold and silver medals at numerous exhibitions. It consists of a metal tank or reservoir in which one or more nests of buckets are submerged; so that each bucket is drawn up full of water. The buckets are held in position by guides, and cannot become jammed, neither can they be displaced when drawing them out. The tank has a sealed cover to prevent evaporation and prevent the water becoming impure—so protected, it may remain in the tank for twelve months without being changed. The apparatus is very neatly arranged and extremely compact. In every case, after the nest of buckets has been withdrawn enough water remains to fill five more—so that in a 10-bucket tank fifteen buckets of water are always in readiness.

Irish Building Materials.

At stand No. 15 in the minor hall the Department of Agriculture and Technical Instruction for Ireland exhibit an extensive collection of Irish building stones and materials, in which so much interest has been taken by those who visited the recent exhibition of these materials at the Imperial Institute. The exhibit includes samples of the varied and excellent building materials and marbles in which Ireland is particularly rich, and it is expected that the opportunity of examining these samples will be of advantage to those who are concerned in the many large building schemes now in progress in London and elsewhere. The beauty and excellence of the Irish granites, sandstones and limestones, as well as of the red, green and black marble and other ornamental stones of the country, are well known, and when shown at the Imperial Institute excited the admiration of all who saw them. The Department have taken steps to place the fullest information at the disposal of enquirers.

The National Opalite Glazed Brick and Tile Syndicate, Ltd.

The highly decorative character of the patent Opalite tiling is seen to great advantage at the stand of Mr. William Griffiths, London concessionaire of the above company, of 41, Hamilton House, Bishopsgate Street Without, E.C. (at special position No. 1, row A). The beautifully polished surfaces, with their various handsome tints, form a most attractive display. In these well-known tiles the old glaze is superseded by a superior and cheaper process, which can be readily applied. The high polish and consequent great reflective power of the surface is not affected in any way by the fixing of the tiles, which have granulated backs (Shelmerdine's patent) fluxed on to them, thus ensuring a secure key. The glaze is practically imperishable, it does not lose its lustre or become patchy when exposed to damp, and is not affected in any way by extremes of temperature. Opalite is therefore confidently recommended for use in bathrooms and lavatories, whilst its uniform distribution of reflected light (and it is claimed that its reflecting power is far superior to that of any other glazing material) renders it very valuable for subways, passages, basements and in other situations where the best possible absorption of light is necessary. Opalite can be applied to old or new brickwork; the advantages of having walls glazed after the brickwork is finished are strongly urged, so that a close joint may be secured and a heavy waste in breakages avoided. It is also claimed that Opalite, which is made in a variety of tints, is much cheaper than ordinary systems of glazing, and is much more easily and cheaply repaired when damaged by accident or hard usage. The material has now stood the test of years, and has given full satisfaction as applied in such important buildings as Windsor Castle, the Stock Exchange, the Bank of England, the Carlton Club, and several hospitals under the Metropolitan Asylums Board, as well as the London County Council. Opalite has been awarded a prize medal by the Sanitary Institute of Great Britain.

The London Fireproof Plate Wall Co., Ltd.

The London Fireproof Plate Wall Co., Ltd., of 60, Watling Street, E.C., show their system of wall construction at stand No. 56, row C. A wall on this system is constructed of plates of gypsum jointed together by intersected passages. In the middle of each plate or slab there is a vertical through passage, and on each side a number of air chambers, which, however, do not pass through the whole height of the plate. Horizontally the plates are jointed together by fillets and grooves. As each row is placed in position the plates are jointed with cement, and liquid cement is poured down the vertical passages, filling up those which are open, ascending those which are closed (as far as the compressed air allows) and filling up the horizontal joints in their entire length. This is continued course by course until the wall is completed and formed into one sheet as though cast in a large mould; extraordinary strength is given to the wall by the cement columns formed in the whole of its height. The air-chambers in the plates are quite impervious to sound, and act as non-conductors of heat, besides tending considerably to reduce the weight of the walls. As an instance of the size of walls which can be erected may be mentioned three which have recently been completed in the first floor of a board school at Todmorden. Two of these walls were 20ft. long by 21ft. high and one 31ft. long by 19ft. high. These walls, which were built on the first floors, did not require any additional supports, and were finished in a week. The surface for about 4ft. deep, and the length of each wall, was prepared for use as blackboards. (Walls have been erected in Berlin 58ft. long and 41ft. high.) For the purpose of giving extra stability to the walls, or where larger walls than those mentioned are required, iron tubes or rods are cemented into the vertical passages throughout the whole height of the wall. Double walls can also be formed suspended from a beam built into the main walls, thus taking the whole of the weight off the floor.

John Bennett Lawes & Co., Ltd.

At stand 38, row B, Messrs. John Bennett Lawes & Co., Ltd., of Atlas Works, West Ferry Road, Millwall, E., show specimen work in "Gypo" fire-resisting plaster and "Lawes'" Keene's cement. Girders and columns are encased in "Gypo" plaster, and also with Portland cement as well. Galvanized corrugated sheet-iron partitions are shown covered in "Gypo" plaster, with sections painted and papered. All "Gypo" work on iron is placed direct on to the surface of the metal without the aid of any key whatever. This firm has just completed covering 50,000 sq. ft. of iron columns with "Gypo" fire-resisting plaster 1in. thick, covered with Portland cement and sand 1in. thick, at Millwall Dock Granary — replacing the 4in. concrete usually adopted and saving the cost of metallic lathing, cradles, &c. Mack's fireproof partition slabs are also exhibited covered with "Gypo" polished, mouldings and cornices in "Lawes'" Keene's cement, and other specimens of "Gypo" work.

The London Basalt Stone Co.

The London Basalt Stone Co., Ltd., 45, Parliament Street, S.W., exhibit in galley bay No. 25 specimens of their celebrated Rhenish basalt macadam in all sizes, and basalt columns; also lava setts and large patent concrete conduits — the company makes conduits up to 7ft. in diameter in circular form, and in egg-shape 7ft. high. They are also exhibiting non-slippery pavement, kerbing and channelling. The latter has iron tees running longitudinally through it, which greatly increases the strength. The top face of the kerbing is bevelled to suit the fall of the pavement. The company have also on their stand specimens of Trass, another volcanic product used in addition to cement for the purpose of increasing its strength; also pumice bricks.

Silicate-of-Lime Stone, Ltd.

Samples of the new silicate-of-lime stone, the invention of Mr. R. P. Ford, and manufactured by Messrs. The Silicate-of-Lime Stone, Ltd., of 32, Victoria Street, S.W., are exhibited at stand No. 54, row C. The samples show the stone to look exactly like natural stone, except they are more even in colour and texture. Examples of carving are shown which prove that the stone is most even in working, and we are assured that the great defects to which all artificial stone made with lime by the application of superheated steam is liable – namely, the silication not being equally effected in every part, especially in the interior of the block, soft pockets being found—have been overcome by means of most expensive machinery. The variations in colour from a clear white to a warm cream or pink are obtained by using various coloured sands. Very large blocks have been obtained, one of the greatest difficulties in former attempts at this class of stone, some being as large as 6ft. by 3ft. The claims upon which the utility of this stone are based are briefly that it resists weather better than the natural stones, Bath and Portland, is even in colour and texture, and has a greater crushing strain. With regard to cost, it is stated the stone can be produced for about 4d. per foot cube, and sold for about 10d. as against 11d. for Bath and 1s. 6d. for Portland stone. The labour of working is about equal to Portland. Tests as to its strength show it about three times that of Portland, and it resists the action of acids better than Portland or Bath.

New Expanded Metal Co., Ltd.

The stand (special position No. 7, row D) of Messrs. The New Expanded Metal Co., Ltd., of York Mansion, York Street, Westminster, is one of the most striking in the hall. It is plain, and gains its effect from the pleasing proportion and feeling of style. The structure has a concrete floor 13ft. 6in. clear span, having expanded steel tension bond, built 3in. off the ground so as to show the method of temporary centering employed in practical working. A strip of the metal tension bond is left exposed throughout the length of the floor so that anyone can see the form of construction. On two sides of the structure is shown 2in. solid partitioning with window and door details, expanded steel and brass panels being substituted in the latter, in place of the usual wooden panels. The other two sides are enclosed with expanded steel verandah railings. There are also shown the expanding steel lathing and plaster encasing of girders and stanchions, false columns formed of expanded steel lathing and plaster, panelled ceilings, suspended ceilings, coving and false beams of expanded steel and plaster. Altogether this structure shows the many and various purposes to which this metal lathing is adapted, and the particular means employed in practice far better than any number of drawings could do. All observers will at once comprehend the system. An attractive feature of the exhibit are the sky signs of expanded steel around the top of the structure.

Mr. W. E. Farrer, of 36, Cannon Street, Birmingham, exhibits at stand No. 17, gallery bay, automatic alternative distributing apparatus for small bacteria beds (such as are required for asylums, barracks, &c.). The apparatus is simple and ensures the whole bed being successively sprayed with well aërated sewage. "Torfit" urinals are also exhibited.

Messrs. Burn Brothers, 23 & 24 Charing Cross, S.W., occupy stand No. 35, row D, gallery. Here they show numerous varieties of drain pipes and fittings, stoppers, inspection mirrors, brass and lead traps, tidal valves, sinks with anti-flooding overflow, &c.

Cresswell's patent "Vorticone" inlet and extract ventilators, in terra-cotta and metal, are shown at stand No. 13 in the minor hall by the Vorticone Ventilator Co., 77, Victoria Street, Grimsby.

Mr. George Riches, Church Street, Cromer (stand No. 20 in the minor hall), shows specimens of his bricks—red facings, red moulded and other varieties. A speciality is made of gauged work.

At stands Nos. 17 & 18, row D, gallery, Messrs. Askham Brothers and Wilson, Ltd., Yorkshire Steel and Engineering Works, Sheffield, exhibit spring rail points, &c.

Messrs. W. Salter & Co., 587 & 589, Harrow Road, Kensal Green, W., occupy stand No. 39, row D, gallery, where they exhibit asphalt for roofs, paving, &c.

Messrs. J. Halden & Co., 8, Albert Square, Manchester, exhibit electric copying frames and other apparatus for engineering photography—black line prints and blue prints (stand No. 106, row F).

The Horsham Engineering Works, Horsham, Sussex, exhibit at stand No. 9, bay, the "Vulcan" elevating pug mill, which has an elevator fixed on the delivery, the clay being thus carried by a worm on to the table in four separate lots, ready for four makers.

Messrs. Babcock & Wilcox, Ltd., of Oriel House, 30, Farringdon Avenue, E.C., show models of their patent water-tube steam boiler fitted with steam superheater (first introduced in 1867, but since much modified); of their mechanical chain-grate stoker; of their water softener and heater; as well as specimens of steel piping, and a tube cleaner operated by water power or air-pressure (stand No. 7, bay).

The Granite Silicon Plaster Co., Ltd., 36, King's Road, St Pancras, N.W., occupy stand No. 40, row B, where they exhibit their plaster, which has been largely used by the War Office and Post Office, as well as in many public buildings, hospitals, asylums, &c. Work in this plaster can be commenced and finished in one day; so that it is really cheaper than ordinary mortar plaster, although the first cost is somewhat more.

Messrs. J. C. Broadbent & Co., Ltd., 73, Basinghall Street, E.C. (works at Redcar and Hazlehead), exhibit slag wool at stand No. 42, row B. The material is the best for pugging, sound-deadening and non-conducting purposes.

Moule's patent earth-closets—which are admirably handy where there is no water-carriage system—are shown at stand No. 47A, row B. The offices of the company are at 5A, Garrick Street, W.C.

Messrs. D. Anderson & Son, Ltd., of Finsbury Pavement House, E.C., Lagan Works, Belfast, and at Manchester and Glasgow, show their "Stoniflex" roofing and other felts, as well as silicate cotton in various forms, and Anderson's patent hair fabric for covering pipes, &c. The firm's stand is No. 60, row C.

Velvril paint is shown by the Velvril Co., Ltd., 29 New Bridge Street, E.C. (stand No. 67, row C). This paint contains no lead or linseed oil, is easy to work, quick drying, gives a hard smooth surface, is perfectly waterproof and non-corrosive. It is suitable for use on iron, steel, wood, cement, &c.

Messrs. Hall & Co., Croydon, Ltd., Victoria Wharf, Croydon, occupy stand No. 79, row D, where they show varieties of slates and tiles. Precelly best randoms were used on the Royal School of Art Needlework, South Kensington. Precelly rustics make a pleasing roof particularly suited to country houses and mansions. Precelly best peggies are small slates for turrets and Mansard roofs. Buttermere, Elterwater, Bettws-y-Coed, Bangor, Carnarvon and Portmadoc slates are also supplied by this firm.

Messrs. H. J. & C. Major, Ltd., of the Patent Tile Works, Bridgwater, exhibit tiles of various kinds at stand No. 94, row E—roofing tiles, ridge tiles, malt-kiln tiles, baker's-oven tiles, &c.

High-class joinery is a speciality of Messrs. Samuel Elliott & Sons, Ltd., of Caversham, Reading, who exhibit at stand No. 97, row E. They are also the patentees and manufacturers of Elliott's patent "Perfect Simplex" weather-bar for casements opening inside.

The South Lincolnshire Brick and Tile Co., Ltd., Bourne, exhibit specimens of red facing pressed and wire-cut bricks, red facing sand-faced bricks, tiles, ridges, string-courses and finials at stand No. 117, row F.

The Wood Carving Co., Ltd., of Windsor Street, Birmingham (stand No. 64, row C), show Saracenic and patent fitments, carved balusters, newels, overdoors, pressed and plain hardwood mouldings, finger plates and lock furniture. Special attention is given to the finish of the work done by this firm.

Messrs. J. B. Stone & Co., Chiswell House 135, Finsbury Pavement, E.C., who occupy stand No. 148, wall space, exhibit their chain-saw mortising machine, door and sash clamping machine, sash relishing and mortising machine, pocket-cutting and window frame machine, as well as a moulding sander, trimmers, saw benches, band-saw and other machines.

Ripolin paints are shown on stand No. 3, bay, by Messrs. Ripolin, Ltd., Dominion House, 110, Fenchurch Street, E.C. One coat of gloss Ripolin is claimed to be equal to one coat of the best white lead and one of varnish. Ripolin flat is a washable flat enamel. Both are suitable for interior and exterior work.

At stand No. 5, bay, Messrs. Moffatt & Eastmead, of Green Street Engineering Works, Blackfriars, S.E., exhibit their patent self-sustained belt-power elevators and hand-power lifts, "Delta Despatch" sack lifts, their patent self-sustaining crab and Moffatt's feed-water heater.

Messrs. L. Lewis & Co., of 51, Shirland Road, W., at stand No. 16, row A, show their flexible mastic damp-course, patent flexible mastic roofing and slaters' felts.

Messrs. Meldrum Brothers, Ltd., 66, Victoria Street, S.W., exhibit several models at their stand (No. 5, B and C row). These are of their simplex regenerative refuse-destructor, of Fielding & Platt's hydraulic flag press, and of the Brunn Loewner water softener. A unique collection of curios from destructors is also shown.

ELECTRIC-LIGHT STATIONS.*

THEIR DESIGN AND ARRANGEMENT.

By Mr. ERNEST R. MATTHEWS, C.E., F.G.S., Borough Engineer of Bridlington.

MR. MATTHEWS gave a detailed description of the various points necessary to be observed in designing an electric-light station, illustrating his remarks by drawings of the proposed Bridlington electric-light station, which he had designed and which was about to be carried out. He first dealt with the engine-house, and pointed out that it was a great mistake to cramp up the building, that the floor area should be full and sufficient, and that ample space should be left not only between each engine but also adjoining each wall of the engine-house. He then referred to the necessity of making provision for future extensions by building a temporary end. He stated that plenty of head-room was necessary in order that the overhead crane could run to and fro with perfect freedom. The walls, he considered, should be built in cement-mortar, and should be calculated to withstand not only the strains due to the overhead crane and the thrust of the roof, but also the vibration set up by the engines. Piers built in cement should support the girders or arches carrying the overhead traveller. He stated that it was a most decided advantage to have the walls of an engine-house lined with glazed bricks, and he described such a method which he had adopted in the Bridlington engine-house. He considered that a 10-ton crane, worked by hand from the floor by ropes, was quite sufficient for a small station. Plenty of light was necessary, and he recommended that one-seventh of the roof surface should be skylight and about one-sixth of the total wall-area windows. Ample ventilation should be provided, chiefly by means of hopper ventilators in the windows, and by means of the glazed roof-ventilators.

The engine bed would vary from 5ft. to 20ft. in thickness, according to the type and weight of the engine. The floor might with advantage be paved with red Staffordshire encaustic tiles, laid herring-bone fashion on 6in. or 9in. of concrete, the cover plates of the trenches being filled in to match the floor. A convenient size for the trenches, he thought, was 2ft. 6in. wide by 2ft. deep. The drains should have manholes at intervals; the roof should be supported by light steel roof-trusses; brackets should be inserted in the walls to carry pipes, and there should be a pair of broad doors, running on rollers at the temporary end.

The floor area of the boiler-house would depend on the number, size and type of boilers. The Bridlington boiler-house measured 63ft. by 33ft. 6in., and it accommodated two Lancashire boilers, each 7ft. 6in. diameter and 30ft. in length. In calculating the weight of the boilers for foundation purposes it was necessary to include water and fittings. Concrete 2ft. in thickness should be sufficient. Provision should be made for future extensions by building one side of the boiler-house in a temporary manner. The height might with advantage be from 24ft. to 30ft., and the floor should be sunk several feet.

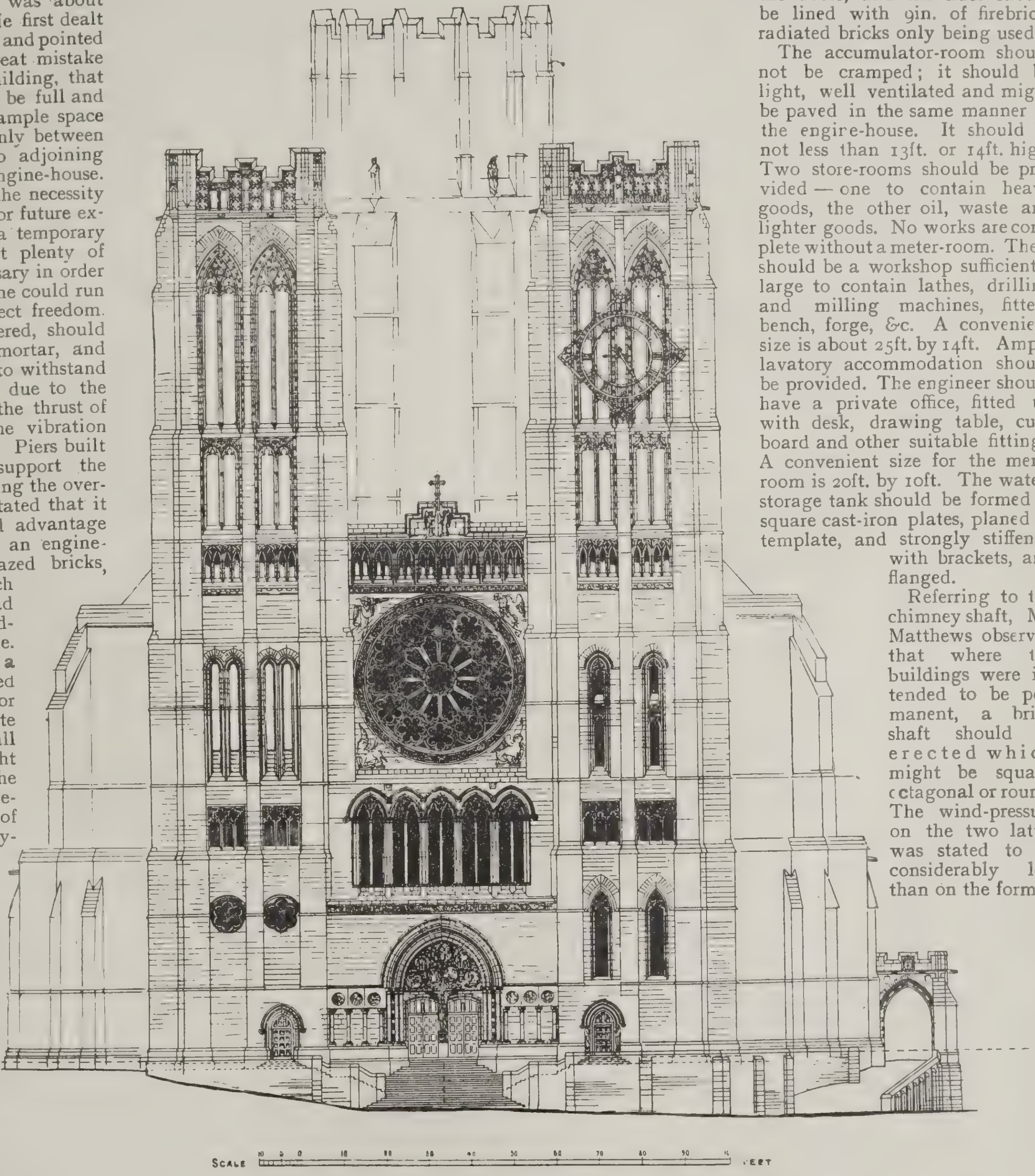
The walls should be built in cement-mortar, and plenty of light should be provided by means of a number of large windows placed on the permanent side, and about one-fourth of the roof covered with patent glazing. The ventilation might be by means of hopper ventilators in the windows and louvre ventilators in the roof. The floor might with advantage be paved with flags on 6in. or 9in. of concrete, and the trenches should be covered with wrought-iron checker plates.

The roof should be supported by steel roof-trusses, and should be close-boarded. Drainage for the scum and blow-off cocks, water-gauge cocks, &c., should be provided. The coal bunker should be placedas near to the furnaces as possible, and an inclined footway should lead to the boiler-house for the purpose of wheeling ashes out. Care should be taken in the arrangement of the doors, and the flues should be lined with 9in. of firebrick, radiated bricks only being used.

The accumulator-room should not be cramped; it should be light, well ventilated and might be paved in the same manner as the engine-house. It should be not less than 13ft. or 14ft. high. Two store-rooms should be provided — one to contain heavy goods, the other oil, waste and lighter goods. No works are complete without a meter-room. There should be a workshop sufficiently large to contain lathes, drilling and milling machines, fitters' bench, forge, &c. A convenient size is about 25ft. by 14ft. Ample lavatory accommodation should be provided. The engineer should have a private office, fitted up with desk, drawing table, cupboard and other suitable fittings. A convenient size for the men's room is 20ft. by 10ft. The water-storage tank should be formed of square cast-iron plates, planed to template, and strongly stiffened with brackets, and flanged.

Referring to the chimney shaft, Mr. Matthews observed that where the buildings were intended to be permanent, a brick shaft should be erected which might be square, octagonal or round. The wind-pressure on the two latter was stated to be considerably less than on the former, the relative pressures being:—Square, 1·0; octagonal, 0·65; round 0·5. The external width of the shaft at the base should be, if square, one-tenth of its height; if octagonal one-eleventh, and if circular one-twelfth.

Mr. Matthews then dealt with the foundation, observing that, given a good clay foundation, a chimney 150ft. high might stand on a good bed of Portland-cement concrete (5 or 6 to 1) 20ft. or 22ft. square by 7ft. or 8ft. thick. The concrete should remain three weeks before any brickwork is



DESIGN FOR LIVERPOOL CATHEDRAL BY C. A. NICHOLSON: ELEVATION TOWARDS UPPER DUKE STREET.

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* Summary of a paper read before the Society of Engineers on June 8th, 1903.

placed upon it, and all the bricks should be of the same density.

He then dealt with the thickness of the brickwork, also the bond, which should be one course of headers to three or four courses of stretchers. The mortar, he said, should be lime-mortar and not cement-mortar, which was too rigid. The brickwork should proceed slowly, say 3ft. or 4ft. per day. He said the cap might be of iron, terra-cotta, or stone, and should not project more than the thickness of the brickwork. The shaft should be lined to a height of at least 30ft. for ordinary heats with a firebrick lining. The lightning conductor should not be carried around projections, but through them. The author then gave particulars of how the lightning conductor should be fixed; also as to how the inside diameter or area of a flue should be determined, and as to the height of a shaft.

Mr. Matthews stated that the tender of Messrs. G. Storr & Son, contractors, of Bridlington, for the buildings had been accepted, the contract amount being £5,283. The consulting electrical engineer is Mr. J. H. Medhurst, B.Sc., M.I.E.E., of Westminster, and the total estimated cost of the works is £26,000.

Correspondence.

The West Front of Wells.

To the Editor of THE BUILDERS' JOURNAL.

LONDON.

SIR,—In a study I have lately made of the images on the west front of Exeter Cathedral it has been shown that the scheme figured the Coronation of the Virgin, the central subject being surrounded by apostles, prophets, the royal ancestors of the Virgin and rejoicing angels. It is natural to turn from Exeter to the more glorious image wall of Wells. Here, since Cockerell wrote, it has been the custom to interpret the fine series of kings, bishops and deacons as English kings and clergy of local interest. Following the critical study which in France has been given to cathedral iconography, I hold it for certain that the whole of the sculptures must be explained by reference to the Bible and the Calendar of Saints.

At the apex of the gable is Christ in majesty; directly below, in two tiers, are the twelve apostles and the nine orders of angels (these two last are comparatively late sculptures). The next row beneath is filled with a series of small subjects representing the resurrection of the dead. Then come two great tiers of statues, mostly kings and bishops. A row of small Bible histories follows, and a series of angels holding crowns, mitres, books, scrolls, &c., in quatrefoil panels. Beneath these again was another tier of statues, but these are mostly lost. In the tympanum of the west door is the Virgin and Child, with two censing angels, and above in a large central niche is a lovely coronation of the Virgin. In the last the figures of Christ and the Virgin are about life-size and of remarkable beauty. His foot is on a lion; hers seems to have rested on a serpent. This group is certainly the centre of interest of the whole front, and the meaning of the rest of the sculptures must be sought in relation to it; so much at least the Wells front has in common with Exeter—it celebrates the triumph of the Virgin.

There are few other clear data for founding a sure theory for the interpretation of this great scheme of sculpture.

The leading facts are that—

(*a*) To the north of the central axis there are a great many kings and knights, and to the south a great many bishops. There are one or two interchanges, but, generally, we may speak of the side of the kings and the side of the bishops. (It is said that Arabic numbers have been found on some of the statues, and this may point to shifting at some time.)

(*b*) Here and there are figures of martyrs and saints.

(*c*) William of Worcester, writing about 1450, says that the rows of great images of the west front and south return treated of the "New Law" and that the north return represented the Old Law. In these small Bible story panels, the north half is devoted to the New Testament and the south half to the Old Testament, but it is at least evident that William described carefully from personal observation, and that he was told nothing about English kings.

(*d*) The kings are figured trampling on smaller figures of knights and kings, some with their arms bound, and most expressing rebellion and rage. In several cases it is clear that the kings carried swords or sceptres and other objects. One holds a large shallow cup, or rather a dish on a stem, and in a second case the foot of a cup remains. The king just above the coronation of the Virgin is said to have held a building. One of the figures holds his tunic aside so as to show a curious plate over his thigh. This is evidently applied above an under-garment like a piece of armour for the protection of the thigh, possibly of leather. Following the analogy of other cathedrals one might expect that the kings would represent the royal ancestors of the Virgin, but there are several difficulties in the way of this explanation, the foremost being the manner in which the kings are balanced by priests as above described. It seemed possible that these priests might represent the priestly line of the Virgin's descent as given in St. Luke, but it is difficult to suppose that priests of the Old Law would be represented as bishops. The royal ancestry theory would, however, well explain the king and queen who stand directly above the Coronation group. This king held a building, and would thus be Solomon, as in the east window of the same church; moreover, Solomon and Bathsheba are proper Old Testament types to accompany representations of the coronation of the Virgin. They are found together in the Biblia Pauperum, and are so painted in the glass at King's College. On the Old Testament theory the figure showing his thigh might be Jacob, and one with a cup, Melchizedech.

It is possible to suppose that the kings and knights on one hand were the ancestors of Christ and other Old Testament worthies, and that the bishops and other priests were the descendants in spirit under the New Law. This furnishes a general idea, such as we must suppose would have ruled in a great work of art. And it agrees with William of Worcester's antithesis between the Old Law and the New. Arguments against it are the difficulty of supporting such an interpretation by examples in other places; and the interchange between a few of the churchmen and laymen. It is possible that the only scheme was to have saints and martyrs broadly divided into religious and secular in their several ranks of life—popes, bishops, deacons, abbesses; kings, queens, knights. That some correspondence as between "kings and priests" was intended seems to be made evident by the angels in the quatrefoils who carry crowns and mitres.

The only way of proceeding further will be by making individual identifications, and to this end I propose the following. The figure standing in water and carrying two children must be St. Eustach; it cannot be St. Nicholas, who was a bishop, nor St. Christopher, who should only have one child. St. Eustach was very popular, and a large wall-painting is devoted to his story in Canterbury Cathedral. The king and queen over the coronation of the Virgin are Solomon and Bathsheba, not Ina and his queen. There is no difficulty in supposing that this pair of figures are pendants to the Virgin's coronation, even though the other kings are not Biblical. The series of deacons in the north tower are probably Stephen, Vincent Lawrence and other popular deacon-martyrs. These took a first place amongst the great saints of Christendom. The bishop carrying the crown of his head in his hands may be St. Denis, although he is usually figured carrying his mitred head. Can it be St. Thomas of Canterbury? It is difficult to think that he would not be present in a group of sainted churchmen, and according to some accounts the top of his head was cut off. One or more of the ecclesiastics have tall conical mitres: such a tiara marks a pope. An old illustration of one of the figures shows a bishop carrying a stone; if this representation was correct, he was probably, as suggested in Parker's calendar, St. Elphage.

The images were painted throughout on a systematic plan, as may be seen from vestiges which here and there give evidence to careful examination. Indeed, it is the colour-skin of ochre still adhering to the heads of most of the statues which has preserved them in so marvellous a way for seven hundred years. The splendid group of the coronation of the Virgin has its ground coat nearly intact all over, and this would have been highly illuminated. The ground of the niche in which the figures are seated is drilled with many holes, which we may suppose bore gilt metal stars on an azure ground. The central door below still shows strong red on the roll mouldings and bright blue here and there in the quatrefoil which contains the Virgin and Child. The row of niches in the central bay on either hand of the coronation group had their recesses of deep red. The angels in the row of quatrefoils have in several cases the ground colour of yellow ochre all over, and the same may be found in places on the Bible story series. The tree in the baptism panel also shows the ochre clearly. The panel of Christ disputing with the Doctors is particularly interesting as still showing decorative detail added in painting. The wall of the Temple is carried out in red, "masoned" as it was called, and its cornice has scroll leafage painted on it in black.

I have spoken above of the heads of the large standing statues being coloured in ochre; this smooths the texture of the stone, so that it takes up reflected lights; but this is not all, for in two or three cases it is still evident that the hair and eyebrows were black and the lips were coloured red (the foundation colour of ochre we find on other early figures—those on the choir screen at Salisbury, for instance). Here and there patterns were doubtless added as borders and diapers to the robes, and portions were touched with gold, as the little building in the hand of the king above the coronation group, which, according to Cockerell, was gilt.

The central door with the coronation of the Virgin above it must have been splendid in bright colour. Sixty years ago Cockerell saw vestiges of gold on the figures and mouldings of the doorway; the ground was ultramarine, the mouldings gold and red, the figures partly gilt. This colour must have been echoed in the ranks of saints round about, and the heads of the statues must have shone out under the canopies like carved and painted ivory.—Yours truly,

W. R. LETHABY.

Devon and Exeter Architectural Society.—The "Proceedings" of this Society for 1902–03, just issued, include, among other matters, some notes on architecture in Switzerland, with sketches, by Mr. Harbottle Reed. The statement of account shows a balance in hand of £20.

R.I.B.A.

New Council, Committee and Members.

At the last meeting of the Royal Institute of British Architects the following elections were made for 1903-4:—

President.

Aston Webb.

Vice-presidents.

John Belcher.
T. E. Collcutt.
A. Darbyshire.
J. Slater.

Council.

F. T. Baggallay.
C. E. Bateman.
G. F. Bodley.
J. J. Burnet.
A. W. S. Cross.
Ernest George.
J. S. Gibson.
J. A. Gotch.
E. T. Hall.
C. H. Heathcote.
Arnold Mitchell.
E. W. Mountford.
Beresford Pite.
G. H. Fellowes Prynne.
S. B. Russell
W. H. Seth-Smith.
J. W. Simpson.
Leonard Stokes.

[Not elected:—A. C. Blomfield, W. D. Caröe, H. O. Cresswell, F. R. Farrow, W. M. Fawcett, W. Flockhart, G. E. Grayson, E. A. Gruning, J. Douglass Matthews, F. L. Pearson, S. P. Pick, H. H. Statham, C. Harrison Townsend, Silvanus Trevail, Paul Waterhouse and R. S. Wornum.]

Associate Members of Council.

V. S. Balfour.
H. V. Lanchester.
W. J. N. Millard.
E. W. Wimperis.

[Not elected:—A. T. Bolton and H. W. Wills.]

Representatives of Allied Societies.

G. C. Ashlin (R.I.A. of Ireland).
J. W. Beaumont (Manchester)
A. W. Brewill (Nottingham).
H. K. Bromhead (Glasgow Institute).
A. H. Crawford (Edinburgh).
Arthur Harrison (Birmingham).
Butler Wilson (Leeds and Yorkshire).
Joseph Wood (Bristol).
J. Woolfall (Liverpool).

[Not elected:—A. Clyne (Aberdeen), D. Morgan (Cardiff), J. W. Taylor (Newcastle) and A. Waverley (Leicester).]

Representative of the Architectural Association.

H. T. Hare.

Auditors.

L. Ambler.
W. A. Forsyth.

Art Standing Committee.

J. Macvicar Anderson.
W. D. Caröe.
T. E. Collcutt.
Sir W. Emerson.
Ernest George.
J. S. Gibson.
H. T. Hare.
E. W. Mountford.
J. W. Simpson.
Leonard Stokes.
R. S. Balfour.
H. V. Lanchester.
W. J. N. Millard.
P. E. Nobbs.
W. H. Romaine-Walker.
E. W. Wimperis.

Literature Standing Committee.

J. Bilson.
A. W. S. Cross.
F. Hooper.
W. A. Pite.
G. H. Fellowes Prynne.
R. Phené Spiers.
Hugh Stannus.
H. H. Statham.
C. Harrison Townsend.
Paul Waterhouse.
A. S. Flower.
C. H. Reilly.
R. Elsey Smith.
Percy L. Waterhouse.
A. M. Watson.
P. S. Worthington.

Practice Standing Committee.

T. Battenbury.
S. F. Clarkson.
E. Flint.
G. Hubbard.
A. H. Kersey.
J. Douglass Matthews.
W. H. Nash.
J. O. Smith.
T. H. Watson.
E. Woodthorpe.
W. H. Atkin-Berry.
C. H. Brodie.
Max Clarke.
H. H. Langston.
A. W. Tanner.
W. H. White.

Science Standing Committee.

Thomas Blashill.
E. Flint.
J. S. Gibson.
F. Hooper.
G. Hornblower.
W. E. Riley.
H. D. Searles-Wood.
A. Saxon Snell.
B. Tabberer.
Keith D. Young.
H. W. Burrows.
Max Clarke.
B. J. Dicksee.
E. R. Hewitt.
G. Pearson.
A. D. Watson.

Fellows.

W. A. Atkin-Berry.
B. W. H. Brameld (Manchester).
W. J. Burrows.
E. Guy Dawber.
Horace Field.
J. W. Fisher (Wellingborough).
J. Gibbons (Manchester).
H. J. Lanchester.
H. C. Pegg.
R. Pope (Folkestone).
H. Redfern
H. W. Rising.
A. H. Ryan-Tenison.
F. W. Tasker.
W. H. White.

Associates.

C H. Ballantyne (Melbourne).
E. A. Jollye (Wolverhampton).
A. Woodroofe (Vancouver, B.C.).

Hon. Associates.

Alfred East. A.R.A.
T. H. Mawson (Windermere).
J. Soloman, A.R.A.

Hon Corresponding Members.

Jean Louis Pascal (Paris).
Heino Schmieden (Berlin).

The following alterations in the schedule of conditions of contract, about which negotiations with the Institute of Builders had been made, were adopted:—As printed on p. 319 of the "Kalender," line 3, for "said" read "signed"; lines 4 and 5, for "and instructions in explanation of the same" read "instructions, directions and explanations"; line 9, for "in excess of" read "extra to"; line 12, for "excess" read "extra." The following clause, for use where quantities are part of the contract, was also adopted:—12A. Should any error appear in the bills of quantities other than in the contractors' prices and calculations, it shall be rectified, and such rectification shall constitute a variation of the contract, and shall be dealt with as hereinafter provided.

NEW RESERVOIRS.

On Thursday, May 28th, the members of the Junior Institution of Engineers, by permission and under the personal guidance of the engineer, Mr. Joseph Francis, M.I.C.E., visited the Staines reservoirs communication works of the New River Company, special arrangements for their reception having been kindly made by the contractors, Messrs. John Aird & Sons, of whom Mr. Basil P. Ellis was present. The intake is formed at the side of the Staines reservoirs aqueduct, and is furnished with an automatic gauge for measuring the quantity of water received. Thence the water will flow into a suction tank having a capacity of 1,000,000 gals., from which it will be pumped to a height of 24ft. into two subsiding reservoirs having a joint capacity of 300,000,000 gals. and a total area of 62 acres, the depth of water in each being 20ft. The embankment of the reservoirs will be of earth, with clay puddle walls in the middle, carried down to the London clay that underlies the site. From the reservoirs the water will flow through lines of 42in. pipes to the filter beds, first passing through tanks provided with float-valves to retain the water surface in the beds at a fixed level. There will be twelve filter beds, each of an area of three-quarters of an acre. The filtered water will be pumped through a 42in. main, $13\frac{1}{2}$ miles in length, to Cricklewood, where it will be again pumped through a main $3\frac{3}{4}$ miles in length to a service reservoir at Fortis Green, Finchley, at a level of 298ft. above O.D. The engine-house will contain two first lift engines, three second lift engines, auxiliary engines and eight boilers. There will be in connection therewith an octagonal chimney-shaft 135ft. in height. Six sand-washing apparatus will be provided, and settling tanks and coke filters for treating the effluent water from the sand-washing, before its delivery through a line of pipe, 2 miles in length, into the River Thames. There will also be provided coal stores, offices, a fitting and other shops, stores, stabling, a residence for the manager and cottages for workmen. From the adjoining railway a siding will be formed for the conveyance of coals, sand, castings and other material required. The Act of Parliament authorising the construction of the above-mentioned and other works, at a cost of £1,000,000, was obtained in the year 1897. Notable features of the inspection included the colossal engine-house; the processes in the formation of the puddle walls for the reservoirs; the ingenious gravel-washing apparatus; puddle-clay excavation by means of steam navvy; puddle-mixing machine; locomotives, wagons, &c., on the contractor's railway, of which there are ten miles laid. Mr. Samuel Cutler, Junr., M.I.M.E., the newly-elected vice-chairman of the Institution, proposed the vote of thanks.

BRICKMAKING IN AUSTRIA-HUNGARY

American Machinery and the Combination of Manufacturers.

The Board of Trade have received through the Foreign Office a copy of a memorandum, drawn up by the Commercial Attaché to H.M. Embassy at Vienna, relating to the introduction of American brickmaking machinery in Austria and to the combinations formed by brick manufacturers in both Austria and Hungary. According to this memorandum American brickmaking machinery was introduced into Austria in the year 1899 by the "Wienerberger Ziegelfabriks und Baugesellschaft," a company representing with its annual output of 200,000,000 bricks the biggest individual brickmaking industry in the world. Already in 1898 the company had decided on this step owing to the difficulty of obtaining sufficient labour for the manufacture of hand-made bricks, and also to the fact that the brick produced by the "stiff mud clay" process was not popular with consumers.

Many difficulties, however, had to be overcome before the American machinery intended for the production of the American standard brick of $8\frac{3}{4}$in. by $4\frac{1}{2}$in. by $2\frac{1}{2}$in. (222 by 108 by 64 millimetres) could be successfully adapted to the manufacture of the larger Austrian standard brick of 290 by 140 by 65 millimetres. Nevertheless, within a year these preliminary difficulties were overcome, and since 1899 two vertical machines from a firm at Cincinnati, Ohio, have been at work in the Wienerberger factory. In the following year the general director of the company, Dr. Emil Teirich, proceeded to America for the purpose of studying other kinds of brickmaking machinery in use in that country. As a result of these investigations the company introduced the horizontal machines of a firm at Wellington, Ohio, and improved upon them to such an extent that one of these machines is now capable of turning out 2,500 bricks—Austrian standard—per hour. During the last three years the construction of brickmaking machinery has been occupying the attention of Austrian machine manufacturers, and at the present time horizontal machines on the Wienerberger Co.'s system and vertical machines on Craeger & Son's system, and on the system of the Eastern Machinery Co., of Newhaven, Connecticut, are being turned out. Several brick factories in Austria have adopted this class of machinery, and it would seem as if Germany was going to follow suit, as during the present year two brickmaking machines have already been exported thither from Austria. An Austro-Hungarian Brick Trust does not exist. In the year 1900, however, nine of the principal manufacturers of Vienna and neighbourhood formed themselves into an association for the purpose of disposing of their production in ordinary wall bricks by means of a general sales bureau. After duly weighing the different possibilities of an organisation of this nature, it was finally decided that the Wienerberger Co. should undertake on commission the sale of the total production of the parties to the contract. The proceedings of this company, as commission agents to the Association, are controlled by a committee representing the different firms interested. The firm acting as commission agents receive, as compensation for its working expenses, $1\frac{1}{2}$ per cent. of the invoice value of the goods sold. After deduction of this commission, all profits, bad debts, &c, are shared *pro rata* by the Association. The committee decides what proportion of production should for the time being be allotted to each individual manufacturer in the Association, and fixes selling prices, credit facilities, &c., according to the requirements of the market. The factories, parties to the foregoing contract, are in a position to turn out annually about 400,000,000 bricks, Austrian standard. The Association was not founded for the purpose of raising prices, but with the object of reducing expenses and establishing fixed rules as to the method of payments; and from all reports it would seem that the system is working equally satisfactorily for both consumers and producers.

In Hungary a different arrangement has been made. With a view to the prevention of over-production, a joint stock company was formed at Budapest in 1899 for the sale of ordinary wall bricks. The company consists of sixteen factories, with a total annual output of about 420,000,000 bricks. The capital of the company is 1,000,000 crowns, divided into 1,000 shares of 1,000 crowns each, of which 30 per cent. is paid up. Owing to a "pooling" arrangement amongst the holders the shares are not on the market. The object of the organisation is the sale of all bricks produced by shareholders, whether hand- or machine-made, the granting of cash advances on stocks on the basis of a stipulated minimum price, and the regulation of production according to the requirements of the market. The direction of the company is entrusted to a council of fifteen members, and its supervision in detail to a committee of five. The improvement in prices anticipated by the company has, however, as yet, not been realized. This is partly to be attributed to the competition of five factories which have not joined the cartel and partly to a reduced demand owing to the depressed condition of the building trade in Hungary. The company's profits for 1900 were only 16,431 crowns and for 1901 28,833 crowns. No dividend has as yet been declared. Inasmuch as there is no export trade in bricks from the dual monarchy, no comparison between home and export prices can be made.

R.I.A.I.

Examination and Registration.

A SPECIAL general meeting of the Royal Institute of Architects of Ireland will be held at Dublin to-morrow to consider a report from the committee appointed to confer with ths Architectural Association of Ireland on the subject of qualifying examinations for admission to this Institute. The committee recommend that no one shall in future be eligible for admission to membership unless (in addition to the other qualifications set out in the by-laws) he has passed two examinations held by their Institute—a probationership examination (candidates for which to be not less than nineteen years of age and to furnish evidence of general education), and a membership examination for candidates who have already passed the probationership examination (such candidates to be not less than twenty-three years of age). The committee further recommended that an interval of at least one year should elapse between the passing of the two examinations; that the probationership examination should be chiefly theoretical and historical, and the other chiefly of a practical nature and dealing with professional practice; that a joint committee of the R.I.A.I. and of the A.A. of Ireland should be appointed to draw up a scheme of examinations and to frame a syllabus; and that the examiners should be appointed by the council, and the standard of the examinations for membership be equal to that adopted by the R.I.B.A. for associateship. It is also recommended that a candidate who has passed the latter examination should not be required to pass the examination of the R.I.A.I.; and that for a period of twelve months after the date of the first examination the council of the R.I.A.I. should have power to dispense with all examinations in the case of candidates who have been in practice as principals for not less than ten years.

The meeting will also consider the following notice of motion from Mr. W. T. Gilliland: "That the absence of restriction of the use of the title 'Architect' to those properly qualified to use same is a great injustice to architects who are so qualified, and seriously retards the progress of architecture in Great Britain and Ireland. That it is the duty of the Council of the Royal Institute of British Architects as representing the profession to make an immediate and serious effort to obtain statutory powers for the purpose of establishing such restriction."

Keystones.

In Charlton Kings Parish Church an oak screen has been placed in the south transept, and is a facsimile of the organ screen.

Cyfarthfa Castle, which has for some time been practically unoccupied, is being restored. The architect is Mr. Charles Morgan Davies, and the contractor Mr. John Jenkins.

The Drapers' Schools, Purley, have been enlarged in the addition of a new wing from designs by Mr. George Lethbridge, the architect. Messrs. Buckland & Waters, of Redhill, were the builders, their contract amounting to £4,375.

Change of Address.—Mr, Bertram Blount, consequent on the death of his partner, Mr. W. H. Stanger, has removed his chemical laboratory and testing works to 76–78, York Street, Westminster, where he will continue to practice under his own name.

A New Workhouse Infirmary at Bideford has been opened. It has cost £3,248, and accommodates thirty-eight patients. It is built of Marland bricks, with red-brick dressings. Messrs. R. T. Hookway & Son were the architects, and Messrs. Ellis & Sons the builders.

A new Wesleyan Church at West Kirby is being erected in Westbourne Road, at a cost of about £3,600. Messrs. John Wills & Sons, of Derby and London, are the architects. The design is Gothic, and the exterior facing will be local rock stone with ashlar dressings round the windows and doorways. Mr. Samuel Fowler, of Bootle, is the contractor.

New Central Public Baths at Bradford are being erected in Morley Street, and district baths in Drummond Road, Manningham. The cost of the Morley Street baths is about £34,000, and they have been designed by Mr. A. Hessell Tiltman, F.R.I.B.A., while the city architect (Mr. F. E. P. Edwards) is generally superintending the work.

A Housing Competition.—Messrs. A. B. M'Donald & P. Fyfe, Glasgow, the assessors in the competition invited by Hamilton Town Council for plans for the housing of the working classes, have made the following awards: 1st, R. W. Horne, A.R.I.B.A., 201, Kent Road, Glasgow; 2nd, W. Inglis, 102, Portland Place, Hamilton; 3rd, F. Southorn, architect and surveyor, 144, St. Vincent Street, Glasgow.

Stable Fittings.—Messrs. Hayward, Bros. & Eckstein, Ltd., of Union Street, Borough, London, S.E., have just secured the contract to supply all the stable fittings (for fifty-six stalls) for the Tottenham Urban District Council, new general depôt, The Green, Tottenham. Quite recently this firm has also supplied stable fittings to the Nottingham Corporation, Aston Manor District Council, and Bermondsey Borough Council, &c.

St. Mary's Parish Church, Whitechapel, was reopened recently after complete restoration. A sum of about £7,000 has been spent in repairing the church and in other works.

Dundee Institute of Architecture Sketching Club last week visited Pitkerro House, which has been recently restored and enlarged by Mr. R. S. Lorimer, A.R.S.A., architect, of Edinburgh. The company was shown over the old and new parts by Colonel Dick, the proprietor, and greatly admired the Scottish character of the work, special notice being taken of the plaster ceilings with their enrichments.

Liverpool Cathedral.—The general committee appointed by Mr. Bodley and Mr. Scott, the joint architects for the new cathedral, and have instructed them to prepare the plans with such modifications as they may think desirable; also to provide a morning chapel to seat 300, a chapter house, and more commodious vestries. They have also been requested to submit plans for the foundations for the chancel by October 1st next, so that the foundation stone might be laid during the Spring of next year.

The View from Richmond Hill.—At last week's meeting of the Richmond Town Council the alleged undertaking by Sir J. Whittaker Ellis to prevent building on the Buccleuch House grounds was considered. The parties concerned had now provisionally agreed to a modification of Sir Whittaker's letter containing the alleged undertaking by which one dwelling-house might be erected within a defined line on the back part of Cambridge Park Gardens, but the remainder and part of the Haversham Grange estate were to be protected from any further buildings, except observatories and others for garden purposes. This agreement was approved by the Town Council.

Views and Reviews.

Some Modern Drawings.

These are twelve drawings illustrative of the story of a woman and her child. They are essentially mystic, both in meaning and treatment, but are effective in their bold arrangement of blacks and whites. The best is that inserted in this issue "The Path to the Sun," whither the central figures of the story go. It will be seen from this inset that the reproduction of the drawing is admirably clear. The sheets are hand-made, and are enclosed in a portfolio of green cloth. Mr. Jephson is the well-known Surrey cricketer.

Twelve Drawings by Will G. Muir illustrating "A Fragment" by D. L. A. Jephson. London: R. J. Everett & Sons, 56 Ludgate Hill, E C. Price 7s. 6d. nett.

Obituary.

Mr. C. H. Cooksley, a well known Glamorgan builder and contractor, was accidentally cut to pieces by an express train at Llantrissant last Saturday week.

Mr. Harry Harper of Falkland House, Ballards Lane, Church End, Finchley, committed suicide last week by shooting himself. Deceased was the head of the firm of Harry Harper & Co., the well known builders, of Highgate and London.

Mr. Robert Walker, F.R.I.B.A.—We deeply regret to have to announce the decease at Windermere last Wednesday of Mr. Robert Walker, who had an extensive practice in the Lake District. Deceased was sixty-two years of age. He was elected a fellow of the Royal Institute of British Architects in 1893. Only last week we announced he had taken into partnership his son, Mr. Frank H. Walker, and Mr. James Carter, of Windermere, late of Darwen.

LONDON HOSPITAL.

The New Out-Patients' Department.

THIS important building, opened by their Majesties the King and Queen on Thursday last, takes the place of the old out-patients' department which occupied a part of the cramped, dark and badly-ventilated basement of the old west wing of the hospital. To form a site it was necessary to demolish forty houses. The building as completed is the largest of its kind in the United Kingdom, occupying nearly an acre of ground, but is only proportionate to the number of out-patients, 162,147 of whom were treated last year.

The building is entered from Oxford Street through a vestibule (capable of seating 200 patients) in which are the registration and ticket offices, at which new patients are registered and old cases receive their tickets. In the centre of the ground floor is a spacious waiting hall 105ft. by 55ft. and 40ft. high, having seating accommodation for 1,000 persons. It has an open steel roof with a lantern the whole length, in addition to large windows in the upper part. At the east end of the building there are two complete suites of rooms forming the surgical department. Each suite consists of a surgeon's room 28ft. by 19ft., clinical assistant's room, an operating room with a recovery room adjoining, two examining rooms, and on both male and female sides there are waiting-rooms for old and new cases with separate surgical dressing-rooms. At the west end is situated the medical department. This has also two suites of rooms, each of which consists of physician's room 30ft. by 19ft., clinical assistant's room, two examining-rooms, and waiting-rooms for both old and new cases for each sex. After receiving their prescriptions, the patients pass out through two waiting lobbies past the dispensary, and medicines, &c., are dispensed through eight hatches; the patients then leave the building by the exits into Green Street. This dispensary is connected with the laboratory in the basement by an electric lift and a separate staircase, and is completely fitted up in the most approved and modern style. A refreshment bar is attached to the waiting hall for the sale to the patients of light refreshments at nominal prices. Drinking fountains are provided both in the waiting hall and the vestibule. The general arrangement of the plan ensures that the patients after entering at Oxford Street are sorted, and then proceed through the department in which their case is dealt with, while after obtaining their medicine they leave by the exits into Green Street without crossing the progress of other patients. There are two private entrances from the street for the use of the staff and the officials. This out-patients' department is connected with the west wing of the hospital by a subway under Turner Street.

On the first floor are situated the aural, dental, obstetric and massage departments; all complete in themselves, having the necessary consulting-, operating- and waiting-rooms. The aural department at the east end has a consulting-room 60ft. by 19ft., fitted with thirteen tables, two operating-rooms with anæsthetising- and recovery-rooms, and a dark-room, together with male and female waiting-rooms. The dental department at the west end consists of extracting- and stopping-rooms with anæsthetising and recovery, teeth-cleaning and waiting-rooms. The obstetric department has two consulting-rooms, with dressing- and waiting-rooms. The massage-room has a waiting-room for each sex, and the staff sitting-rooms are also on this floor. The second floor is devoted to the ophthalmic, photographic and electrical departments. The ophthalmic department has rooms for surgeons and clinical assistants, large refraction- and dark-rooms, also an operating room with anæsthetising and recovery-room adjoining. There is a large photographic studio with two dark-rooms and workshop and store attached, also a separate room for radiography. The electrical department has a large consulting room with electric bath-room, Röntgen-ray room and dressing-rooms adjoining. The lupus department is also on this floor, and contains the "Finsen" lamp which her Majesty presented to the hospital, together with several other lamps. There are separate rooms for the surgical dressing of wounds, medical officer and nurses. The motor-generators and other apparata for transforming the electric current to supply this department are situated in a room on the roof above. These upper floors are approached by four staircases and two large lifts.

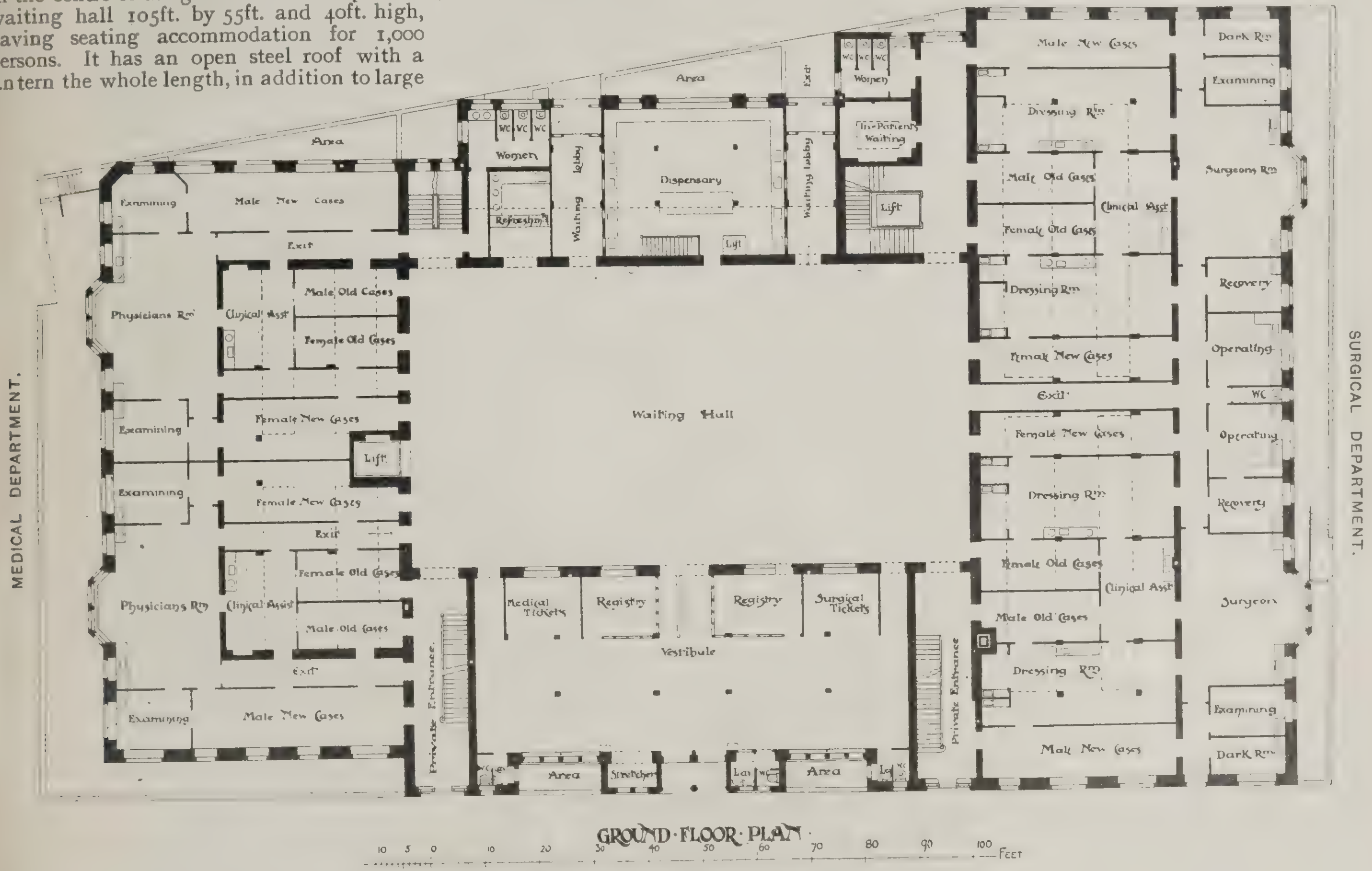
The basement contains a large laboratory department, with stores. The bath department consists of medicated and Turkish baths with the necessary dressing- and waiting-rooms, and is also in the basement, together with the boilers, isolation rooms and accommodation for students, dispensers, porters and other officials. The whole building is of fireproof construction, and the floors throughout finished with mosaic (by Messrs. Diespeker, Ltd.), and where necessary the walls are glazed with either glazed brick or Opalite; the remainder are finished with Serapite plaster.

The internal and external areas are faced with white-glazed bricks, and the external elevations are faced with red brick and artificial-stone dressings. The large waiting hall and principal rooms are ventilated by a system of inlet and forced outlet ventilation.

The total cost of the building has been £80,000, of which sum £25,000 was given by a friend of the hospital. The balance of £55,000 still remains to be collected.

The buildings have been erected from the designs and under the superintendence of Mr. Rowland Plumbe, F.R.I.B.A., of 13, Fitzroy Square, London, W. Mr. Henry J. Wagg, 15, Great George Street, acted as consulting electrician, Mr. William Shepherd being the builder and Mr. G. T. Murton the clerk of works.

At the opening ceremony Mr. Plumbe and Mr. A. F. Yarrow were presented to their Majesties by the Duke of Cambridge.



LONDON HOSPITAL, WHITECHAPEL: NEW OUT-PATIENTS' DEPARTMENT. ROWLAND PLUMBE, F.R.I.B.A., ARCHITECT.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Measuring Street Frontage.

REDDITCH.—P. M. writes: "In measuring the frontage to street on a building estate where the street is at a considerable angle, should such frontage be measured between perpendiculars or on the line of slope?"

Horizontal measurement between perpendiculars is correct. G. A. T. M.

Hollows in Brickwork: North and South Practice in Quantities.

BIRKENHEAD.—QUANTITIES writes: "In the North we usually include an item in our quantities of yds. super. forming hollows in brickwork reduced to the same standard thickness as the brick walls. This is the labour only in forming all openings for doors and windows, &c., the superficial area of the window or other openings being taken and reduced to the standard thickness in the same manner as the brickwork itself. Is this also the custom in London and the South, and, if not, what is the usual way of giving the labour in forming openings? I see no mention of it in the works on quantity surveying."

It is not the custom in London and the South to take an item for forming hollows in brickwork. Having had a good deal of experience of Northcountry-work, I have endeavoured at various times to discover the object of this item—the only justification for it, in the opinion of some of the builders asked (the others could give no opinion), being a labour to "plumbing jambs." While there may be something in this, the system of taking it in the same way as the brickwork seems most illogical—*e.g.*, an opening 4ft. by 6ft. in a 9in. wall gives 50 per cent. more of "plumbing jambs" than one 6ft. by 4ft. in an 18in. wall; yet in the latter case the builder gets twice as much in quantity when reduced to the standard thickness.

W. E. D.

Co-operative Building.

LITTLEHAMPTON.—STENOGRAPHER writes: "How is the profit-sharing principle (such as instituted by the Carnegie Steel Co.) applied to the building trade?"

Mr. Carnegie being a man of energy, whose business was his pleasure; having the special kind of clever organizing faculty; being autocratically in command, he could increase a salary or pay a bonus just as he deemed most effective for his purpose; in this way he worked up his big business until it became an organism with life in itself. The question of the morality of trusts, even when they rest on a basis of co-operation, is too large to deal with in answer to your question. Profit-sharing bears a family likeness to "piecework." There are, however, departments to which piecework will not apply. If twenty men carry a burden in such a way as that it is no way evident how much each man is doing, the honest ones of the twenty will have too much to do: the "organizing" man will fit upon each of these men's shoulders an indicator which will register the time-pressure, and he will pay accordingly; this is piecework. Profit-sharing goes a step further; it not only pays for work done, but it is supposed to stimulate to increase the supply of work; it is a payment on results after book-keeping shows that something more than the estimated profit has been earned. The manufacture of building materials, bricks, cement, joinery, &c., is easily organized into a routine, like the working of a railway or the distribution of goods; but what I understand by the building trade is a very complex thing, and it appears to me to be too difficult a business to deal with by means of any short formula to be written down in reply to so short a question as has been put. The work of a manufactory or of a distributing business is fairly steady; the growth of the number of letter carriers, for example, is slowly continuous. In the building trade it is not so (unless it is proposed to monopolize the whole trade of the country), so that there is much greater flux in the numbers of men on a builder's books than in probably any other business: where men come and go it is impossible to have what is known as co-operation. There is a fairly steady nucleus in most cases, and the principle might be applied to it; but building firms themselves are notably much subject to business vicissitude; their standing and capital do not in many cases command the same confidence as the standing and capital of, say, a railway company. Losses, weather, unforeseen rise in the price of slates, for example, accident, miscalculation—any one of these causes affecting one large job which may bear a very large proportion to the total capital of the "firm," will bring it into bankruptcy. It is well known that builders work under greater risk than other business men. I am unable to do more to assist "Stenographer" than by these very general remarks. P.

"Drain" or "Sewer."

LONDON, S.W.—C. N. writes: "A drain under the centre of one house also takes the drainage from houses adjoining on each side. The drains are shown on a plan, dated 1856, in the borough council's possession. Is the pipe under the centre house a drain or sewer, and who is responsible for its repair? Should not the sanitary authority serve all three houses with notice if serving any notice at all *re* defects?"

It would greatly facilitate the consideration of questions of this nature if our correspondents would furnish definite information as to the Act or Acts of Parliament under which the local authority obtains its powers, for according to existing conditions such details must naturally govern the legal definition as to what constitutes a "drain" or "sewer" in any particular instance. From the general tenor of the question it is assumed that this case does not occur within the London area (which is governed by the provisions of the Metropolitan Management Acts), but in a district subject either to the Public Health Act, 1875, or to the 1875 Act as amended by the Public Health (Amendment) Act of 1890. If the local authority has not adopted the Public Health (Amendment) Act of 1890, but is subject only to the provisions of the Public Health Act, 1875, then it would appear that the local authority is liable for the repair of the drain from the point where it receives the drainage of more than one building. Section 4 of the Public Health Act, 1875, states that a "drain" means any drain used for the drainage of one building only, or premises within the same curtilage, whilst the expression "sewer" includes sewers and drains of every description except "drains" as previously interpreted. In the case of *Travis* v. *Uttley* it was decided that a drain taking the discharge from several houses, and constructed on private property, and also passing under the buildings, was a "sewer" within the meaning of the Act. This case occurred at Halifax in 1893, the Public Health (Amendment) Act of 1890 having not then been adopted by that town. A similar decision was given in the case of *Acton Local Board* v. *Batten*, when it was held that a drain is a "sewer" within the meaning of the Act when more than one house has been connected with it. In *Pinnock* v. *Waterworth* the same view was upheld. Most towns have, however, adopted the Public Health (Amendment) Act of 1890, and under such circumstances the difficulty of determining what legally constitutes a "drain" or "sewer" becomes greater. Under section 11 of the Public Health (Amendment) Act, 1890, it is laid down that the expressions "drain" and "sewer" have respectively the same meaning as in the 1875 Act, *except* that section 19 of the 1890 Act goes on to declare that where two or more houses belonging to different owners are connected with a public sewer by a single private drain, then the local authority may recover the expense of repairs from the owners. Also, that for the purpose of this section the expression "drain" includes a drain used for the drainage of more than one building. In the case of *Seal* v. *Merthyr Tydfil Urban Council* it was decided that a drain into which sewage flowed from the houses of the owner as well as from the adjoining houses was a "private drain" within the meaning of the Public Health (Amendment) Act, 1890. In *Hill* v. *Hair* it was decided that a private drain conveying the drainage of two or more houses belonging to different owners is a "sewer" within the meaning of the Public Health Acts of 1875 and 1890, but this decision has been questioned in other cases. In *Eastbourne Corporation* v. *Bradford* it was decided that a local authority may treat a drain connecting two or more houses, the property of different owners, as a private drain, and repairable as such by the individual owners. A similar decision was given in *Self* v. *Hove Commissioners*. If, therefore, the 1890 Act has been adopted by the local authority, it is possible that the drain taking the drainage of the different house-owners would be legally considered as a "private drain" unless it can be proved that such drain had previously become vested in, or in some way adopted by, the local authority as a "sewer," in which case such drain would still remain a "sewer." For instance, if the houses were erected before the Public Health Act of 1848 was passed, it might possibly be shown that the combined drain had thereby become a "sewer" vested in the local authority under that Act; but the successful pleading of this argument would depend to a large extent on local circumstances. The mere fact that the whole of the house drains are shown on the plans of the local authority does not in itself necessarily prove that all such drains are "sewers." The local authority is not required to serve notices on all three houses, but only on the occupier and owner of the premises on which the nuisance is found to arise. T. E. C.

Fire-escape Stairs and Dancing Floor.

PAISLEY.—SCOT writes: "(1) Kindly refer me to some article on iron fire-escape stairs in hospitals, workhouses, &c. (2) What construction would be best for the floor of a small dancing hall as shown by the accompanying sketch plan (not reproduced), so as so allow some swing on the floor without breaking the plaster ceiling of shop below?"

(1) See Structural Engineer and Fireproof Constructor sections in "Specification, No. 6" (published at 6, Great New Street, E.C., price 5s. 9d. post free). (2) The dancing floor may be arranged as shown by your sketch, but, the floor joists being of 18ft. span, should not be lessthan 11in. by 3 in. and 15in. centre to centre. The common rule for depth in inches = $\frac{1}{2}$ span ft. by 2 and thickness = $\frac{1}{3}$ depth is not unnecessarily strong for ordinary use, and dancing puts a very severe strain upon a floor owing to the rhythmic vibration. The proposed 10 × $2\frac{1}{4}$ joists would by the ordinary formula for strength of beams $\frac{bd^2}{L}$ only carry safely a dead load of $\frac{2\frac{1}{4} \times 10^2}{18^2 \times 1{\cdot}5} = {\cdot}46$, say $\frac{1}{2}$ cwt. per sq. ft., including the weight of the floor itself.

HENRY ADAMS.

Complete List of Contracts Open.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED
		BUILDING:		
June	18	Ballinvullen, Mitchelstown—Residence	Guardians	T. A O'Brien, Clerk, Ballinvullen, Mitchelstown.
,,	18	Pentredwr, Llangollen—Schoolroom	——	J. Jones, Chapel House, Pentredwr.
,,	18	Kensington—Additions to Infirmary	Guardians	J. H. Rutherglen, Clerk, Guardian Offices, Marloes Road, W.
,,	18	Bristol—Bricks, &c.	Guardians	J. J. Simpson, Clerk, St Peter's Hospital, Bristol.
,,	18	Bridlington—School	Education Committee	Holbrow & Caton, 9 Clare Street, Bristol.
,,	18	Tredegar—Seventy Houses	United Building Society	W. S. Williams, Architect, Tredegar.
,,	19	Helston—Additions, &c., to Workhouse	Guardians	W. J. Trezise, Master, Union Workhouse Helston.
,,	19	Hole, Devon—Sorting-Rooms, &c.	Paper Co.	C. J. Bulgin, Architect, City Chambers, Exeter
,,	19	Llantrisant, Wales—Eight Dwelling Houses, &c.	J. Davies	J. Davies, Malthouse Farm, Llantrisant, Wales.
,,	19	Manchester—Receiving and Casual Blocks	Workhouse Committee	A. J. Murgatroyd, 23 Strutt Street, Manchester.
,,	19	Worsthorne, near Burnley—Church Tower	——	Austin & Paley, Architects, Castle Park, Lancaster.
,,	19	Lincoln—Post Office	Commissioners of H.M. Works, &c	Secretary, H.M. Office of Works, Storey's Gate, London, S.W.
,,	19	Stretton Sugwas Hereford—Hospital	Rural District Council	E. G. Davies, 7 Bridge Street, Hereford.
,,	20	Houghton-le-Spring, Durham—House	——	Mr. Pallister, Cross House, Philadelphia, Fence.
,,	20	East Dereham—Repair of Bridge	Mitford R.D.C.	W. M. Barton, Clerk, Guildhall, East Dereham.
,,	20	Swansea—Grand Stand, &c.	Horse Show Committee	E. U. Strich, 14 Wind Street, Swansea.
,,	20	Aberdare—Alterations, &c., to Chapel	——	T. Roderick, Architect, Ashbrook House, Clifton Street, Aberdare.
,,	20	Aberaman, Wales—Fifty-three Houses	Pleasant View Building Club	T. Roderick, Architect, Ashbrook House, Clifton Street, Aberdare.
,,	20	Levenshulme, Lancs—Offices, &c.	Urban District Council	J. Jepson, Guardian Chambers, Tiviot Dale, Stockport.
,,	20	Llanrug, Wales—Eleven Dwelling Houses	W. G. Roberts	R. L. Jones, 14 Market Street, Carnarvon
,,	20	Llantrisant, Wales—Dwelling House	J. Williams	J. Williams, 3 James Terrace, Cross Inn Road, Llantrisant.
,,	20	London, E.—Schools	——	St Antony's, 58 Khedive Road, Forest Gate, E.
,,	20	London, N.—Works	St. Mary (Islington) Guardians	W Smith, 65 Chancery Lane, W.C.
,,	20	Merthyr—Rebuilding	D. Davies	C. M. Davies, 112 High Street, Merthyr.
,,	20	Merthyr, Wales—Rebuilding	R. T. Jones & Co.	C. M. Davies, 112 High Street, Merthyr.
,,	20	Merthyr Vale, Wales—Thirty-one Cottages	——	T. Roderick, Architect, Glebeland Street, Merthyr Tydfil.
,,	20	Smallburgh Norfolk—Laundry	——	F. Davies, Solicitor, North Walsham.
,,	20	Trealaw Wales—Hotel	——	A. O. Evans, Architect, Pontypridd.
,,	20	Taff's Well—Two Villas	——	R. Williams, Draper, Taff's Well.
,,	20	Tredegar—Co-operative Stores	Industrial & Provident Soc., Ltd.	W. S. Williams, Architect, Tredegar.
,,	20	Stapleford—Restoration of Church	——	C. Campbell, Stapleford.
,,	20	Troedyrhiw, Wales—Rebuilding Inn	——	T. Roderick, Architect, Glebeland Street, Merthyr Tydfil.
,,	22	Beaufort, Wales—Chapel, &c.	——	H. Waters, Architect, Beaufort.
,,	22	Hengoed, Gelligaer, Wales—Alterations to School	School Board	James & Morgan, Architects, Charles Street Chambers, Cardiff
,,	22	London, S.W.—Cart-shed, &c.	London County Council	Architect's Department, General Section, 18 Pall Mall East, S.W.
,,	22	New Malden—Church	——	V. Davidson, Architect, Market Place New Malden.
,,	22	Leeds—Portland Cement	Gas Committee	R. H. Townsley, General Manager, Municipal Offices, Leeds.
,,	22	Ilford—Lodge, &c.	Urban District Council	H. Shaw, Council's Surveyor, Town Hall, Ilford.
,,	22	Norwich—Retort House, &c.	British Gaslight Co., Ltd.	T. Glover, Engineer, Bishop Bridge, Norwich.
,,	23	Sheffield—University College	——	Gibbs & Flockton, 15 St. James' Row, Sheffield.
,,	23	Clapham, S.W.—Portion of Car Sheds	——	Architect's Dept. (Highways Section), 19 Charing Cross Rd., W.C.
,,	23	Glasgow—Piggery, &c.	Lunacy District Board	J. R. Motion, 266 George Street, Glasgow.
,,	23	London, N.—Sorting Office	Commnrs. of H.M. Works, &c.	J. Wager, H.M. Office of Works, Storey's Gate, London, S.W.
,,	23	Tredegar—House	Church Trustees	T. Jones, 50 Commercial Road, Tredegar.
,,	23	West Ham—Corrugated Iron Tramcar Sheds	Town Council	J. G. Morley, Borough Engineer, Town Hall, West Ham.
,,	23	Upper Edmonton—Sorting Office	Commnrs. of H.M. Works, &c.	Secretary, H.M. Office of Works, Storey's Gate, London, S.W.
,,	23	London, E.C.—Alterations, &c., to Lavatories, &c.	Guardians	J. Johnson, 47 Mark Lane E.C.
,,	24	Lambeth—Fire-Escape Stairs and Building Works	Borough Council	W. Thurnall, Clerk, Brook Street, Kennington Road, S.E
,,	24	Manchester—Cement	Electricity Committee	F. E. Hughes, Electricity Depart., Town Hall, Manchester.
,,	24	Manchester—Portland Cement	Gas Committee	C. Nickson, Gas Depart., Town Hall Manchester.
,,	24	Halifax—Villas, &c.	——	W. C. Wilkins, 29 Southgate, Halifax.
,,	24	Whitchurch, near Cardiff—Superstructure of Asylum	Cardiff Corporation	Oatley & Skinner, Architects, Edinburgh Chbrs., Baldwin St., Bristol.
,,	24	London, S.W.—Widening, &c., of Station	L. B. & S. C. Railway Co	Engineer of the Company, London Bridge Station, S.E.
,,	24	Swansea—Additions, &c., to School	U.D. School Board	G. E. T. Laurence, 22 Buckingham Street, Adelphi, London, W.C.
,,	25	Cannock, Staffs—Bridge	Rural District Council	H. M. Whitehead, Council's Surveyor, Penkridge, near Stafford.
,,	25	Dewsbury—Boiler-house	Corporation	Borough Surveyor, Town Hall, Dewsbury.
,,	25	London, W.—Stabling, &c.	Ealing Town Council	C. Jones, Engineer, Town Hall, Ealing, W.
,,	25	Salford—Retort-house, Floor, &c.	Gas Committee	W. W. Woodward, Engineer, Gas Offices, Bloom Street, Salford.
,,	25	Mow-Cop—Tower	——	C. H. Fowler, Architect, The College, Durham.
,,	27	Pontygwaith, Wales—Chapel	Soar Church Trustees	E. Davies, 8 Madeline Street, Pontygwaith.
,,	27	Tamworth—Stables	Industrial Co-op. Soc., Ltd.	J. W. Godderidge, 4 Bolebridge Street, Tamworth.
,,	27	Bangor, Ireland—Golf-house	Golf Club	R. H. Finlay, Rent Agent, Main Street, Bangor.
,,	29	Sunderland—Quarter Sessions, Police Court Buildings, Fire Station, &c.	Corporation	W. & T. R. Milburn, 20 Fawcett Street, Sunderland.
,,	30	Kirdford, Sussex—Churchyard Wall, &c.	——	Vicar, Kidford, Billingshurst.
,,	30	Pembroke Dock—Schoolroom, &c.	——	G. Morgan & Sons, 24 King Street, Carmarthen.
,,	30	Croydon—146 Cottages	London County Council	Architect's Dept. (Housing Section) 19 Charing Cross Road, W.C.
July	4	Paddington—Walls, &c.	Borough Council	E. B. B. Newton, Borough Surveyor, Town Hall, Paddington, W.
,,	4	London, N.W.—Orphanage	——	S. G. Goss, 3 Broad Street Buildings, Liverpool Street, E.C.
,,	6	Grimsby—School Buildings	——	E. E. Bentley, 1 Pelham Chambers, Old Market Place, Grimsby.
	21	Buckfastleigh—Pointing, &c., to Church Spire	——	A. Warren, Surveyor, Buckfastleigh.
No date	-	Halewood, near Liverpool—Additions to Rectory	——	A. B. Plummer F.R.I.B.A., Architect, Newcastle.
,,		Watford—School	School Board	W. H. Syme, 4 High Street, Watford
,,		Grayne, near Rochester—Restoration of Church	Church Committee	A. Baker & Day, Solicitors, The Precincts, Rochester
		ENGINEERING:		
June	18	Manchester—Insulating	Markets Committee	City Architect, Town Hall, Manchester.
,,	18	Monaghan, Ireland—Sewage-disposal Works	District Lunatic Asylum Comtee	J. F. Peddie, 36 Scottish Provident Buildings, Belfast.
,,	18	Swansea—Coal Hopper and Shoot	Harbour Trustees	A. O. Schenk, Engineer, Harbour Offices, Swansea.
,,	18	Cheadle, Staffs—Waterworks	Rural District Council	F. S. Cox, Clerk, Union Offices, Cheadle.
,,	18	Egremont, Cheshire—Station Gasmeter	Wallasey Urban District Council	J H. Crowther, Engineer, Gasworks, Great Float nr. Birmingham.
,,	19	London, E.C.—Stores and Tools	Burma Railways Co.	Secretary, 76 Gresham House, E.C.
,,	19	Londonderry—Hot-Water Heater	——	M. A. Robinson, Engineer, Richmond Street, Londonderry.
,,	20	Coventry—Pipe Subway, &c.	Gas Committee	F. W. Stevenson, Engineer, Gasworks, Coventry.
,,	20	Hull—Water-Main	Corporation	F. J. Bancroft, Engineer, Alfred Gelder Street, Hull.
,,	22	Beckenham—Meters	Urban District Council	R. P. Wilson, 66 Victoria Street, Westminster.
,,	22	Colchester—Tramways	Corporation	H. Goodyear, Borough Engineer, Town Hall, Colchester.
,,	22	London, E.—Meters, &c.	Stepney Borough Council	W. C. P. Tapper, 27 Osborn Street, Whitechapel, E
,,	22	Manchester—Sluices, &c.	Corporation	Secretary, Rivers Department, Town Hall, Manchester.
,,	22	London, E.C.—Materials	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
,,	23	Manchester—Sluice Valves, &c.	Waterworks Committee	G. H. Hill & Sons, 3 Victoria Street, Westminster, S.W.
,,	23	Bullfield and Bolton, Lancs—Widening Railway	Lancs & Yorks Railway Co	Engineer, Hunt's Bank, Manchester.
	23	Bridgwater—Pipe-laying, &c.	Rural District Council	T. M. Reed, Clerk, Bridgwater.
,,	23	Bridgwater—Sluice Valves	Rural District Council	T. M. Reed, Clerk, Bridgwater.
,,	23	Brighton—Pumping Station	Council	F. J. Lillstone, Clerk, Town Hall, Brighton.
,,	24	London, N.—Electric Lighting Works	Wood Green U.D.C.	J. W. Britton, Clerk, Town Hall, Wood Green.
,,	24	Colwyn Bay—Gasworks Extension	Urban District Council	J. C. Pennington, Gas Engineer, Colwyn Bay.
,,	25	Ashford, Middlesex—Alterations to Pumps	——	M. G. M. Taylor, 27 Great George Street, Westminster, S.W.
,,	25	Manchester—Refrigerating Machinery	Markets Committee	City Surveyor, Town Hall, Manchester.
,,	26	Goring-on-Thames—Water Supply Extensions	Gas and Water Co.	G. H. Robus, Engineer, Mansion House Chambers London, E.C.
,,	30	Worthing—Refuse Destructor, &c.	Corporation	F. Roberts, Borough Engineer, Municipal Offices, Worthing.
,,	30	Darley Dale, Derbyshire—Waterworks	Urban District Council	G. & F. W. Hodson, Engineers, Loughborough.
,,	30	Barcelona—Boilers	Admiralty	Secretariat of Arsenal, Central Offices, Admiralty, Barcelona.
July	1	Rangoon—Electric Supply Undertaking	Municipal Committee	Ogilvy, Gillanders & Co., 67 Cornhill, E.C.
,,	1	Knutsford—Steam Mains, &c.	Bucklow Union Guardians	R. J. M'Beath, Architect, Birnam House, Lale.
,,	1	Knutsford—Cooking Apparatus	Bucklow Union Guardians	R. J. M'Beath, Architect, Birnam House, Lale.
,,	1	Knutsford—Washhouse and Laundry Fittings	Bucklow Union Guardians	R. J. M'Beath, Architect, Birnam House, Lale.
,,	1	London, E.C.—Tank Engines	East India Railway Co.	C. W. Young, Secretary, Nicholas Lane, London, E.C.
,,	1	Rochester—Timber Wharfing	Corporation	W. Banks, City Surveyor, Guildhall, Rochester.
,,	1	East India—Tank Engines	Railway Co.	Company's Offices, Nicholas Lane, London, E.C.
,,	4	Bristol—Gangways	Electrical Committee	H. F. Proctor, City Electrical Engineer Feeder Road, St. Phillips.
,,	6	Madrid—Waterworks	——	Direccion General de Administracion Local, Madrid.
Sept.	12	Sydney—Electric Tramway Generating Set	Railway Commissioners	Agent-General for New South Wales, 9 Victoria Street, S.W.
Oct.	30	Marina, Upper Barracca, Malta—Lift	Crown Agents for the Colonies	Receiver-General and Director of Contracts, Valletta, Malta.

Complete List of Contracts Open —*continued.*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	FURNITURE:		
June 18	Wolverhampton—Tables, &c.	Guardians	F. Harrison, Clerk, Union Offices, St. Peter's Close, Wolverhmptn.
July 1	Parkeston—Furnishing Schools	Ramsey School Board	J. W. Start, Architect, Colchester.
	IRON AND STEEL:		
June 18	Thurlstone, Yorks—Pipes	Urban District Council	G. & G. H. Crowther, 38 New Street, Huddersfield.
" 18	Bristol—Ironmongery, &c.	Guardians	J. J. Simpson, Clerk, St. Peter's Hospital Bristol.
" 22	Keighley—Pipes, &c.	Gas Committee	J. Laycock, Engineer, Keighley.
" 22	Rochdale—Rails, &c.	Corporation	S. S. Platt, Borough Surveyor, Town Hall, Rochdale.
" 22	London, E.C.—Ironmongery, &c	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment, E.C.
" 22	Leeds—Iron, Stores, &c.	Gas Committee	R. H. Townsley, General Manager, Municipal Offices, Leeds.
" 23	Mountain Ash, Wales—Pipes	Urban District Council	J. Williams, Town Hall, Mountain Ash
" 24	London, E.—Iron Staircase	Poplar Union Guardians	Messrs. Clarkson, 136 High Street, Poplar, E.
" 24	London, W.—Wrought-Iron Fencing	London County Council	Parks Department, 11 Regent Street, W.
" 24	Manchester—Castings &c.	Electricity Committee	F E. Hughes, Secretary, Electricity Dept., Town Hall, Manchester.
" 24	Manchester—Bolts, Nuts, Castings, &c.	Gas Committee	C. Nickson, Superintendent, Gas Dept., Town Hall, Manchester.
	PAINTING AND PLUMBING:		
June 18	Bristol—Oils and Colours	Guardians	J. J. Simpson, Clerk. St. Peter's Hospital Bristol.
" 18	Rothwell, Yorks—Painting Schools	School Board	A. Marshall, Clerk, Rothwell.
" 19	Lincoln—Painting, &c., Works	War Department	Engineer's Office Fishergate, York.
" 22	Dalton-in-Furness—Painting, &c.	Urban District Council	W. Richardson, Surveyor, Council Offices, Station Road, Dalton-in-Furness.
" 22	East Hetton, Durham—Whitewashing, &c.	Coxhoe Board	J G. Burrell, Architect, Market Place, Durham.
" 22	Gateshead—Painting	Education Committee	E. J. Harding, Secretary to Education Committee. Gateshead.
" 22	Leeds—Lead, Oils, Varnish, &c.	Gas Committee	R. H. Townsley, General Manager, Municipal Offices, Leeds.
" 22	Morley—Painting	Corporation	W. E. Putnam, Borough Engineer, Town Hall, Morley.
" 23	London, S.W.—Re-painting, &c.	London County Council	Engineer's Department. County Hall, Spring Gardens, S.W.
" 24	Manchester—Oils, Paints, &c.	Gas Committee	C. Nickson, Superintendent, Gas Department, Town Hall Manchester.
" 29	Morley—Painting	Corporation	W. E. Putnam, Borough Engineer, Town Hall, Morley.
" 29	Jarrow—Painting Schools	School Board	H. M. Adam, Higher Grade School. Jarrow.
" 29	Stratford-on-Avon—Painting, &c.	Town Council	R. Dixon, Borough Surveyor, Municipal Offices, Stratford-on-Avon.,
	ROADS AND CARTAGE:		
June 18	Andover—Flints, Limestone, Granite, &c.	Rural District Council	J. Wormald, District Surveyor, Andover.
" 18	Nelson, Lancs—Private Street Works	Sewage and Streets Committee	B Ball, Borough Engineer, Nelson, Lancs.
" 19	East Ham—Tar Paving	School Board	R. L. Curtis 120 London Wall, Moorgate Street, E.C.
" 20	Lewes—Steam Road-rolling, &c.	Town Council	Borough Surveyor Town Hall, Lewes
" 20	Loughborough, Leics—Granite, &c.	Corporation	A H. Walker, Borough Surveyor, Town Hall, Loughborough.
" 22	Burgess Hill, Sussex—Materials	Urban District Council	Clerk, Council Offices Burgess Hill.
" 23	London, N.—Wood-Paving Works	Urban District Council	W. H. Prescott 712 High Road, Tottenham.
" 23	Whitstable—Material	Tankerton Estate, Ltd	A. A. Kemp, Surveyor, Tankerton Estate Office, Whitstable.
" 23	Walthamstow—Making-up, &c. Streets	Urban District Council	G. W. Holmes, Council's Engineer, Town Hall, Walthamstow.
" 23	Wednesbury—Street Works	Town Council	E. M. Scott Borough Engineer, Town Hall Wednesbury.
" 24	New Brompton, Kent—Materials	Gillingham Urban District Council	F. C. Boucher. Clerk, Council Offices, Gardiner St , New Brompton.
" 25	Lewes—Materials	Town Council	Borough Surveyor. Town Hall, Lewes.
" 25	London, W.—Making-up Four Roads	Ealing Town Council	C. Jones, Borough Engineer, Town Hall, Ealing, W.
" 25	Romford—Works and Materials	Urban District Council	J. Turvey, Surveyor, Romford.
" 25	North Walsham—Granite, &c.	Urban District Council	E. J. Simpson Council's Surveyor, North Walsham.
" 27	Maidstone—Cement Kerbing	Kent County Council	F. U. Ruck, 86 Week Street, Maidstone
" 29	Kettering—Tar, Macadam, &c.	Urban District Council	T. R. Smith, Surveyor, Market Place, Kettering.
" 30	Blackwell, Mansfield—Road Improvement	Rural District Council	H. Silcock, 67 West Gate. Mansfield.
July 1	Lewes—Hire of Steam Rollers, &c.	East Sussex County Council	F. J. Wood, County Surveyor, County Hall, Lewes.
	SANITARY:		
" 18	Bristol—Sanitary Pipes, &c.	Guardians	J. J. Simpson, Clerk, St. Peter's Hospital, Bristol.
" 18	Eastbourne—Sewers &c.	Rural District Council	T. E. V. Kirtlan, 92 Terminus Road, Eastbourne,
" 18	Monaghan, Ireland—Sewage-disposal Works	—	J. F. Peddie, 36 Scottish Provident Buildings Belfast.
" 18	Woolwich—Scavenging	Borough Council	A. B Bryceson, Town Clerk Town Hall, Woolwich.
" 19	Kendal—Sewerage Works	Corporation	R. H. Clucas, Borough Engineer. Town Hall, Kendal.
" 20	Congleton—Lime	Gas Committee	J. Smith, Engineer, Gasworks, Congleton.
" 20	Tottenham—Brick Sewers	Joint Drainage Committee	P. E. Murphy, 712 High Road, Tottenham.
" 22	Belper—Sewers, &c.	Urban District Council	C. J. Lomax, 37 Cross Street Manchester.
" 22	Ilford—Drainage Works	Urban District Council	H. Shaw. Council's Surveyor, Town Hall, Ilford.
" 23	London, E.C.—Surface Drainage, &c.	Guardians	J. Johnson, 47 Mark Lane. E C.
" 23	Ramsbottom, Lancs—Sewers	Urban District Council	J. Diggle, Civil Engineer, Hind Hill Street, Heywood.
" 24	Manchester—Lime, &c.	Gas Committee	C. Nickson, Superintendent, Gas Dept., Town Hall. Manchester.
" 30	Barcelona—Sewers	City Extension	Directorate-General of Ministry of Agriculture, Industry, Commerce and Public Works, Madrid.
July 1	St. Columb, Cornwall—Sewers	Rural District Council	R H. Worth 42 George Street, Plymouth.
" 1	Watford—Sewer and Drain, &c.	Urban District Council	H M. Turner, Clerk to Board, Watford Place. Watford.
No date	Kingston—New Drainage	Steyning West R.D.C.	E. Cripps, Clerk, Council Offices, New Shoreham, Sussex.

Guaranteed Gearing

ROBERT ADAMS,
65 & 67, Newington Causeway, LONDON, S.E.

The Originator and Leading Maker of the Modern System of Ventilating Gearing.

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"ADAMS' SPECIAL CONTINUOUS GEARING"

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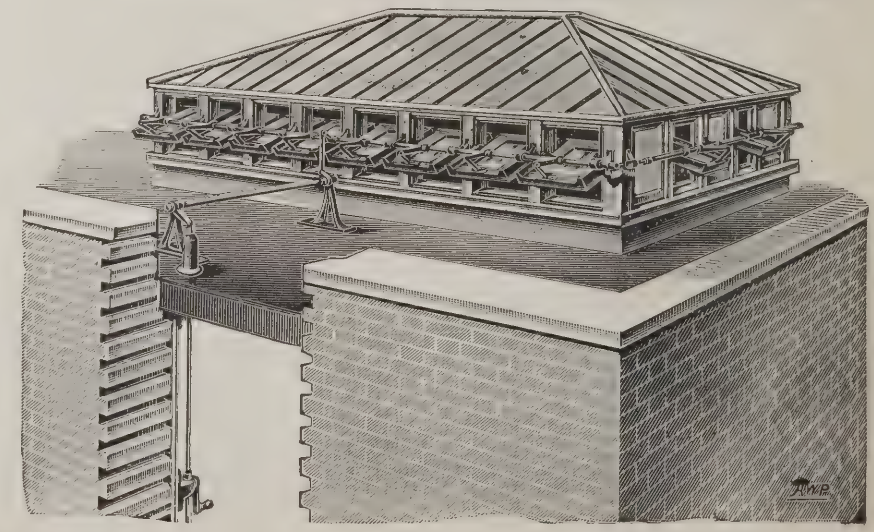
ILLUSTRATED PRICE LISTS ON APPLICATION.

FIFTEEN GOLD MEDALS AWARDED.

This Illustration shows the Gearing fixed outside, the Controlling Handle being within the Room.



When writing to Advertisers please mention The Builders' Journal.

Complete List of Contracts Open—*continued.*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	TIMBER:		
une 18	Bristol—Timber	Guardians	J. J. Simpson, Clerk, St. Peter's Hospital, Bristol.
" 19	Cardiff—Pitwood, &c.	Nixon's Navigation Co., Ltd.	J. L. Herbert, Secretary, Company's Offices, Bute Docks, Cardiff.
" 20	Launceston—Timber	Agricultural Society	J. Kittow, Hon. Secretary Launceston.
" 22	Pwllheli—Block Flooring, &c.	School Board	J. T. Howells, Solicitor, Pwllheli.
" 24	Manchester—Timber	Electricity Committee	F. E. Hughes, Secretary, Electricity Dept., Town Hall, Manchester.
" 24	Manchester—Timber	Gas Committee	C. Nickson, Superintendent, Gas Dept., Town Hall, Manchester.

List of Competitions Open.

DATE OF DELIVERY	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
une 18	Limerick—Library and Museum	£75, £25.	——	W. M. Nolan, Town Clerk, Town Hall, Limerick.
" 19	Bridlington—Water-Supply Scheme	——	——	Mr. Woodhose, Chairman of Parish Council, Flamborough.
" 23	Poplar, E.—Public Library	£75.	——	Borough Surveyor, Council Offices, High Street, Poplar, E.
uly 15	Newark-upon-Trent—Grammar School, &c.	£25, £15, £10.	——	G. Tallents, Clerk to Governors, Magnus Grammar School, Newark-upon-Trent.
" 20	Taunton—Library	£30, £20, £10.	10s. 6d.	G. H. Kite, Town Clerk, Municipal Buildings, Taunton.
No date	Glasgow—Branch Library	——	——	J. D. Marwick, Town Clerk, City Chambers, Glasgow.

Coming Events.

Wednesday, June 17.

CHEMICAL SOCIETY.—Meeting at 5.30 p.m.

INSTITUTION OF CIVIL ENGINEERS.—Mr. John Clarkes Hawkshaw, president, will inaugurate the Engineering Conference with a short address, 10 a.m.

SOCIETY OF ARCHITECTS.—Visit to the Building Trades' Exhibition, 2.30 p.m.

BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.—Ordinary Meeting at 8 p.m.

LONDON MASTER BUILDERS' ASSOCIATION.—Finance Committee Meeting at 3 p.m.

Thursday, June 18.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—Annual Dinner.

INSTITUTION OF CIVIL ENGINEERS.—Engineering Congress. Third Day. Mr. G. T. Beilby on "Smoke Abatement," 10 a.m.

SURVEYORS' INSTITUTION.—Conversazione, Natural History Museum, South Kensington, 9 to 12 p.m.

LONDON MASTER BUILDERS' ASSOCIATION.—Council Meeting at 4 p.m.

Friday, June 19.

INSTITUTION OF CIVIL ENGINEERS.—Engineering Conference. Fourth Day. Mr. B. Talbot on "The Continuous Method of Open-Hearth Steel-Making." Mr. R. A. Hadfield on "Alloys of Iron, Nickel and Manganese." Prof. J. O. Arnold on "The Dangerous Crystallisation of Mild Steel and Wrought Iron." Prof. Percy F. Frankland on "Bacterial Treatment of Water and Sewage up to date." Mr. C. W. Darley, on "Steam Turbine-Driven Centrifugal Pumps for High Lifts." Mr. Percy Griffiths on "The Raising of Water by Compressed Air," 10 a.m.

ROYAL INSTITUTION.—Prof. Pierre Curie on "Radium," p.m.

ART WORKERS' GUILD.—Lecture on "Westminster Abbey," 8 p.m.

Saturday, June 20.

ARCHITECTURAL ASSOCIATION.—Visit to the Building Trades Exhibition.

Monday, June 22.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Presentation of the Royal Gold Medal to Mr. McKim, 8 p.m.

Tuesday, June 23.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Annual Dinner at Hotel Metropole at 7.30 p.m.

Wednesday, June 24.

JUNIOR INSTITUTION OF ENGINEERS.—Visit to Messrs. Spiers & Pond's model laundries, art dyeing and chemical cleaning and steam carpet beating department, 140, Battersea Park Road, S.W., at 6.30 p.m.

A CHURCH BANNER.

THE design of the diocesan banner for the Church Congress, to be held in Bristol in October next, has been made by Mr. G. F. Bodley, and the work is in hand. The central figure will be worked by Messrs. Watts & Co., of Baker Street, and the remainder of the work will be done by ladies of the Bristol guilds for church work, under the general supervision of Mrs. Hollis. The purpose of the banner is to emphasize the historical character which it is desired the Congress at Bristol shall bear. The central figure represents St. Aldhelm, Abbot of Malmesbury A.D. 676-705, and first Bishop of Sherborne A.D. 705-709. The groundwork of the central portion of the banner is a rich cream-coloured damask silk. All of the characteristic features of Aldhelm's person, dress and pastoral staff recorded in history are carefully reproduced. The face is to be painted, not embroidered. The arms of the See of Bristol, wrought in gold on black velvet, are placed above the head of the central figure. At the four corners of the banner, on a ground-work of blue silk, are placed the shields and arms of the city and boroughs of the diocese in the following order, beginning with the dexter chief:—Bristol, Malmesbury, Chippenham, Swindon. These will be painted on silk.

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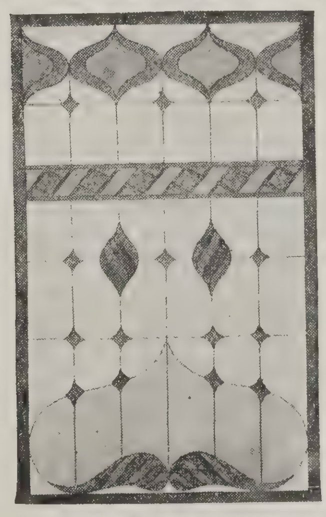

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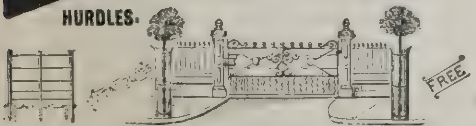

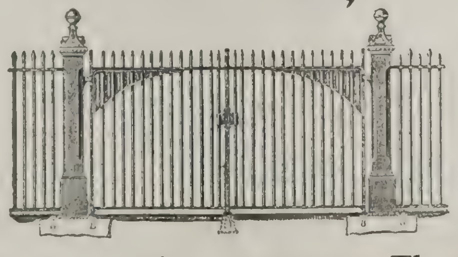

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Current Market Prices

FORAGE.

		£	s.	d.	£	s.	d
Beans	per qr.	1	9	9	1	[illegible]	3
Clover, best	per load	4	7	6	4	15	0
Hay, best	do.	3	15	0	5	10	0
Sainfoin mixture ..	do.	3	15	0	4	5	0
Straw	do.	1	8	0	1	18	0

OILS AND PAINTS.

		£	s.	d.	£	s.	d.
Castor Oil, French ..	per cwt.	1	1	10	1	[illegible]	2
Colza Oil, English ..	do.	1	4	0		—	
Copperas	per ton	2	2	6		—	
Lard Oil	per cwt.	2	15	0	2	17	0
Lead, white, ground, carbonate	do.	1	4	10	—		
Do. red	do.	1	0	4½			
Linseed Oil, barrels ..	do.	1	2	9			
Petroleum, American ..	per gal.	0	0	5⅝	0	0	5
Do. Russian .	do.	0	0	4	0	0	4⅛
Pitch	per barrel	0	8	0		—	
Shellac, orange	per cwt.	6	9	0		—	
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Home Melt ..	per cwt.	1	9	0			
Tar, Stockholm	per barrel	1	1	6		—	
Turpentine	per cwt.	1	16	7½		—	

METALS.

		£	s.	d.	£	s.	d.
Copper, sheet, strong ..	per ton	71	0	0		—	
Iron, Staffs., bar..	do.	6	5	0	8	10	0
Do. Galvanised Corrugated sheet ..	do.	11	5	0	11	10	0
Lead, pig, Soft Foreign..	do.	11	6	3	11	7	6
Do. do. English common brands ..	do.	11	15	0		—	
Do. sheet, English 3lb. per sq. ft and upwards ..	do.	14	10	0		—	
Do. pipe	do.	15	0	0		—	
Nails, cut clasp, 3in. to 6in.	do.	9	5	0		—	
Do. floor brads ..	do.	9	0	0		—	
Steel, Staffs., Girders and Angles	do.	5	15	0	6	7	6
Do. do. Mild bars ..	do.	6	15	6	7	2	6
Tin, Foreign	do.	127	5	0	127	15	0
Do. English ingots ..	do.	128	10	0		—	
Zinc, sheets, Silesian ..	do	26	0	0		—	
Do. do. Vieille Montaigne	do.	26	5	0		—	
Do. Spelter	do.	20	15	0	21	0	0

TIMBER.

Soft Woods.

		£	s.	d.	£	s.	d.
Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow ..	do.	5	5	0	6	5	0
Do. Pitch	do.	3	0	0	3	4	0
Laths, log, Dantzic ..	per fath.	4	10	0	5	10	0
Do. Petersburg ..	do.	7	5	0		—	
Deals, Kovda, 3rd Yell. 3×9	do.	13	15	0		—	
Do. Archangel, 2nd White, 3×9	do.	10	10	0		—	
Do. do. do. 3×11	do.	12	5	0		—	
Do. do. 3rd White 3×11	do.	10	0	0		—	
Do. Galatz, 2nd White, 3×11	do.	10	0	0	11	5	0
Do. Montreal, 2nd Yellow Pine, 3×9×12ft.	do.	15	10	0		—	
Do. Gefle, dry, 3rd Yellow, 3×9	do.	16	10	0		—	
Do. Petschora, 4th Yellow, 3×9	do.	9	15	0	10	0	0
Do. Luleå, 1st Yellow, L.A.B., 3×9	do.	10	0	0		—	
Do. Petersburg, 1st White, 3×11	do.	14	0	0		—	
Do. Mesane, dry, 2nd White, 3×9	do.	9	10	0		—	
Do. Ornsköldsvik, Yellow and White, 2½×7	do.	5	5	0		—	
Do. Kristinestadt, unsorted Yellow, 3×7	do.	8	0	0		—	
Do. do. White, 3×8	do.	8	5	0		—	
Do. Oserka, 4th Yellow, 3×9	do.	10	15	0		—	
Do. Stugsund, inferior 5th Yellow, 3×9	do.	7	5	0		—	
Do. Skellefteå 2nd Yell., 3×9	do.	9	15	0		—	
Do. do. do. 3×10	do.	9	0	0		—	
Do. St. Johns, 1st, 2nd and 3rd unsorted bright Spruce, 3×11	do.	8	0	0		—	
Do. do. do. do 3×9	do.	8	0	0		—	
Do. do. 1st, 2nd and 3rd White Spruce, 3×7	do.	7	10	0		—	
Do. Quebec, unsorted Red Pine, 3×9	do.	9	15	0		—	
3×7	do.	8	10	0		—	
Battens, all kinds ..	do.	6	10	0	12	0	0
Flooring Boards 1in. prepared, 1st	per square	0	10	3	0	12	6
Do. 2nd	do.	0	9	3	0	10	0
Do. 3rd &c.	do.	0	8	9	0	10	0

Hard Woods.

		£	s.	d.	£	s.	d.
Ash, Quebec	per load	3	12	6		—	
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	15	0	0	20	0	0
Cedar Cuba	per ft. sup.	0	0	5¼		—	
Do. Honduras ..	do.	0	0	$5\frac{31}{32}$		—	
Do. Tobasco	do.	0	0	$4\frac{31}{32}$		—	
Elm. Quebec	per load	4	0	0		—	
Mahogany, Average Price for Cargo, Honduras ..	per ft. sup.	0	0	5⅞		—	
Do. African ..	do.	0	0	$4\frac{11}{32}$		—	
Do. St. Domingo	do.	0	0	$3\frac{29}{32}$		—	
Do. Cuba ..	do.	0	0	5¼	0	0	$6\frac{5}{32}$
Do. Gaboon ..	do.	0	0	$3\frac{15}{32}$		—	
Do. Tobasco ..	do.	0	0	$6\frac{11}{32}$	0	0	8¼
Oak, Dantzic and Memel	per load	3	5	0	3	15	0
Do. Quebec	do.	6	5	0		10	0
Teak Rangoon, planks..	do.	16	0	0	17	10	0

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver.]

DURING THE WEEK ending June 13th ten failures in the building and timber trades in England and Wales were gazetted.

C. S. TOPLIS, designer, Carlisle. R.O. June 6th.

J. GIBSON, junr., builder, Newburn. R.O. June 5th.

J. FLANDERS, carpenter and builder, Newport, Mon R.O. June 5th.

SNEAP & GITTENS, builders, Stapleford. R.O June 5th.

E. G. BREND, painter and decorator, Llanishen. R.O May 28th.

F. A. CHATFIELD, builder, Stapleford. Gross liabilities. £1,992; £887 to rank for dividend; deficiency £615.

E. LEE & Co., builders, Harrow. Gross liabilities £13,068; assets £1,439.

A. S. HARRIS, builder Bromley. Gross liabilities £5,700; assets £1,240.

S. LEE, builder, Bristol. Gross liabilities £8,987; deficiency £537.

H. MARR, builder, Owleston. Gross liabilities £10,519; £1,972 to rank for dividend; assets £2,421.

D. GOLD, builder, Paisley. Liabilities £2,524; assets £4,015.

GILL & WEST, builders, Southend. Gross liabilities £1,309; assets £647.

J. VERNON, building and contractor, Tarporley. R.O. May 30th.

G. VERSEY, sanitary engineer, Lowestoft. First meeting, Suffolk Hotel, Lowestoft, June 15th, at 3. P.E., Great Yarmouth Town Hall, July 21st, at 11.

I. W. CANNON, builder, Worcester Park. First meeting, 24, Railway Approach, London Bridge, S.E., June 18th, at 12.30 P.E., Croydon C.C., July 22nd, at 11.

PASCOE & SON, builders, Balham. First meeting, 24, Railway Approach, London Bridge, S E., June 17th, at 11.30. P.E , Wandsworth C.C., June 25th, at 12.

J. O. BRETTLE, engineer, Worcester. First meeting, 45, Copenhagen Street, Worcester, June 17th, at 11.30. P.E., Worcester Guildhall, June 23rd, at 2.15.

W. FLUX, builder and undertaker, Newport I.W. Gross liabilities £2,124; £551 to rank for dividend; assets £339; deficiency £211.

W. A. SAUNDERSON, paint, colour and varish merchant, Leicester. Gross liabilities £677; assets £315; deficiency £362.

G. R. SMITH, builder and joinery manufacturer, Abertillery. Gross liabilities £4,987; £2,298 expected to rank for dividend; assets £2,012; deficiency £286.

G. W. DORKING, builder, painter and decorator, Kidderminster. Gross liabilities £7,539; £2,834 expected to rank for dividend; assets £1,922; deficiency £911.

C. WILLIAMS, builder and contractor, Swindon. Gross liabilities £38,534; £7,758 to rank for dividend; assets £2,998; deficiency £4,760.

W. JAMES, builder, Brightlingsea. First meeting, Cups Hotel, Colchester, June 26th, at 11. P.E., Colchester Law Courts, June 26th, at 11.30.

S. HORSEY, builder and contractor, Bournemouth. First meeting, King's Arms Hotel, Dorchester, June 13th, at 12.30. P.E., Poole Town Hall, June 24th, at 11.30.

MAYO & WILLIAMS, builders, Abertillery. First meeting, 135, High Street, Merthyr Tydfil, June 19th, at 3. P.E., Tredegar C.C., July 10th, at 10 30.

G. P. SYMS, plumber, Exeter. R.O. June 3rd. First meeting, O.R.'s Exeter, June 25th, at 10.30. P.E., The Castle, Exeter, June 25th, at 11.30.

G. SPARROW, builder and contractor, Church Stretton' R.O May 30th. First meeting, O.R.'s, Shrewsbury, June 23rd at 10.30 P.E., Shrewsbury Shirehall, June 23rd, at 11.30.

The following company is to be wound up :—

CANNING JARRAH TIMBER CO., LTD. H. St. J. Hodges liquidator.

Builders' Notes.

Heating and Ventilating.—Messrs. E. H. Shorland & Brother, of Manchester, have supplied their patent Manchester stoves with descending smoke flues to the isolation hospital at the Rainhill Asylum, Liverpool, and also the Somerset and Bath Asylum, Wells.

The South Wales Building Trades, Employers' Federation at its annual meeting at Newport last week appointed the following officers:—President and chairman, Mr B. Bennett, Swansea; senior vice-president, Mr. Watkin Williams, Pontypridd; junior vice-president, Mr W. T. Morgan, Cardiff; treasurer, Mr. William Thomas, Cardiff; auditors, Messrs. W. O. Jenkins, Swansea, and T. James, Pontypridd; secretary, Mr. W. H. Billings, Swansea.

The Ipswich Stonemasons have struck work, as the masters objected to a clause in the new code of rules stipulating that employers should have one apprentice to every four on an average. A conference was arranged, however, and the following rule has proved acceptable to both parties. "All employers to have one apprentice to four masons, but employers who do not employ eight masons shall be allowed to take another apprentice during the last year of his first apprentice."

Sub-letting Plastering Work.—At the tenth annual Irish Trades' Union Congress held last week at Newry a resolution was passed expressing the opinion that "the system of sub-letting work in the plastering trade is detrimental to its best interests by work being scamped in an unworkmanlike manner, and we respectfully urge on the architects of Dublin and the various public bodies the necessity that exists for the insertion of a clause in the specifications debarring contractors from sub-letting any portion of the plastering work." Another resolution was passed urging upon Irish local authorities the desirability of using Irish setts as a street pavement.

Electric Wiring Conduits.—Owing to the continued and increasing demand for the Simplex Steel Conduit System, and with the object of furthering the mutual interests of customers and themselves, have considered it desirable to open premises of their own in Glasgow at 165A, West George Street, under the management of their Mr. D. G. Brooks, and have there a large stock of all grades of conduits and fittings ready for immediate delivery.

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One Edge inlaid with Ebony. Best finish.
Sizes, 23″ × 16″, 7/-; 28″ × 19″, 9/6; 32″ × 23″, 12/6; 42″ × 29″, 16/-; 54″ × 32″, 28/- each.

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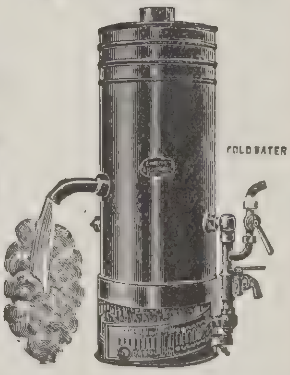

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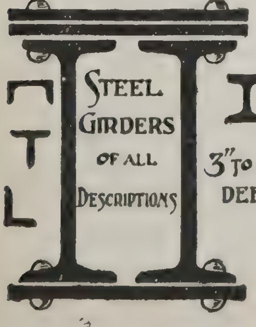

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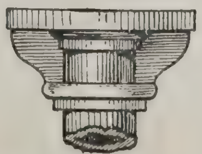

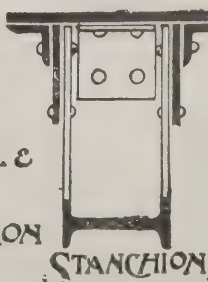

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Tenders.

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Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

Ballidon (Derbyshire).—For extensive farm buildings, &c., at Ballidon, Derbyshire, for the Right Hon. the Earl of Mansfield. Messrs. William Sugden & Son architects, Leek :—

C. Cornes & Sons, Hanley	£2,385	0	0
T. Godwin, Hanley	2,332	18	1
W. Smith & Son, Ashbourne	1,921	13	0
W. Thorley, Snelston	1,870	12	1
B. Buxton,* Mayfield	1,833	16	0

* Accepted.

Barry Dock (Cardiff).—For the erection of a proposed church in Holton Road, Barry Dock, for the Rev. J. S. Longdon and Building Committee. Mr. George E. Halliday, F.R.I.B.A., architect, Cardiff. Quantities by Mr. J. W. Rodger, 14, High Street, Cardiff :—

First and second sections.

A. Richards, Barry	£7,098	0	0
W. Button, Barry	6,536	15	7
Lloyd & Tape, Barry	6,410	19	2
H. S. Rendell, Barry	6,368	8	0
A. W. Cadwallader,* Cardiff	5,958	18	0

* Accepted.

Brighton.—For the erection of twenty-five five-roomed artisan's dwellings and six double-tenement dwellings in May Road, Elm Grove, Brighton Mr. Francis J. C. May, M.I.C.E , F.S.I , borough engineer and surveyor :—

R. Cook & Sons, Crawley	£10,255	0
Rowland Brothers, Horsham	9 398	0
W. Taylor	9,356	0
W. H. Crossley	9,201	4
J. Longley & Co., Crawley	8,679	0
Sattin & Evershed	8,230	0
J. & H. Simmonds	7,770	0
H. A. C. Jay,* Conway Street, Hove	7,700	0

* Accepted. [Rest of Brighton.]

Penybont (Wales).—For the sewerage of Newcastle. Higher Ynisawdre, and St. Brides Minor, Glamorganshire, as follows, for the Penybont Rural District Council: (Contract No. 1) supplying and laying about 4.670yds. of 9in. pipe sewer, together with the construction of all manholes, lampholes, flushing chambers, &c, required for the sewering of Bryncoch and Bryncethin, in the parish of St. Brides Minor; (2) supplying and laying about 166yds. of 6in. and 3,380yds. of 9in. pipe sewers, together with the construction of all manholes, lampholes, flushing chambers, &c., required for the sewering of Tondu, Pwllandras and Brynmenin; (3) supplying and laying about 133yds. of 6in., 4,558yds. of 9in., and 1,029yds. of 12in. pipe sewers, together with the construction of all manholes, lampholes, flushing chambers, &c, required for the sewering of Aberkenfig and Tyngarn; (4) supply of cast-iron pipes; (5) castings, &c. Messrs. Burnett & Hurley. engineers, 10, Bridgend Road, Tondu. Aberkenfig, Glamorganshire :—

Contracts Nos. 1, 2 and 3.

M. Thompson, Briton Ferry	£8,196	16	2
Davies & Ball, London	7,677	15	2
A. G. Collins & Co., Barry	7,570	11	8
E. Powell,* Whitchurch, Cardiff	7,439	14	7

Contracts 2 and 3.

J. H. McDonald, Cirencester	£9.993	4	3
R. C. Brebner & Co.. Edinburgh	9,437	3	5
M. Green, Cavehill Road, Belfast	9,197	5	6
E. H. Page, Cardiff	8.930	0	3
Barnes, Chaplin & Co., Cardiff	8,595	8	0
J. C. Hitt & Sons, Bridgend	8,336	9	5
P. Gaylard, Coity Road. Bridgend	8,260	12	4

Contracts 1 dan 3 only.

R. Jones, Coychurch, Bridgend	£5,883	7	5

* Accepted.

(*Continued on page* xxxiv.)

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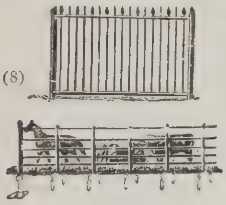
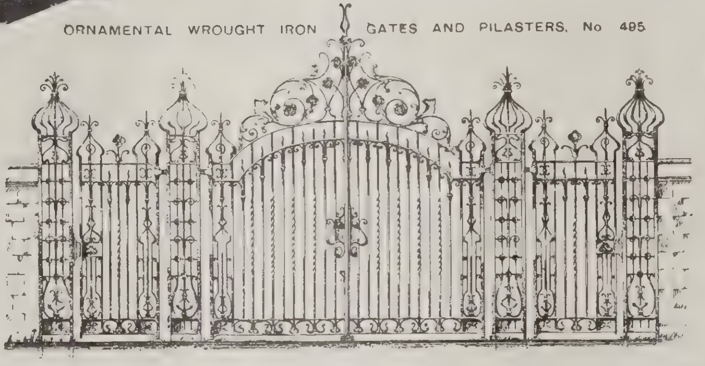


ORNAMENTAL WROUGHT IRON GATES AND PILASTERS. No 495



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ARCHITECT'S AND SURVEYOR'S MANAGING ASSISTANT desires Engagement in large city. Young and energetic; capable business man and Quantity Surveyor. High class provincial experience. References. Abir, Box 2485, Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

ARTISTIC & PRACTICAL ASSISTANT wants to change situation. Good all-round experience. Designing, working drawings, good freehand and perspective in any treatment. Small salary; looking for better work.—Box 2495, Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

BUILDER'S FOREMAN or SUPERINTENDENT seeks SITUATION. Bricklayer, young. Thoroughly understands plans, quantities, and can draw small plans.—G. H., 43, Lower Manor Road, Godalming, Surrey.

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GENERAL FOREMAN, practical, working, steady and reliable, seeks job to develop estate or would build for financier; carpenter and joiner.—Address H. H., 7, Park Grove, Bromley, Kent.

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TO QUANTITY SURVEYORS.—Situation wanted by Advertiser (22), 3 years on large contract. Advanced construction and drawing certificate; mathematics and elementary quantities. Excellent references. Moderate salary.—F. A. G., 10, Braemar Road, Brentford.

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The School will be established in some central provincial town, and would be in session only from October to April.

The exact curriculum will be decided by the Committee in consultation with the Master appointed, but the qualifications required in the latter would be thorough knowledge of the different schools of decorative art, methods and processes, and a good executive ability as a decorative artist. Hours 8.30 to 6.30 p.m. Saturdays 1 p.m.

Applications, with credentials and specimens of work and salary required, to be sent to W. C. Sutherland, Secretary, Registered Offices of the Association, 26, Oxford Street, C.-on-M., Manchester.

ARCHITECT'S PUPIL.—A VACANCY occurs in a busy West End office. Very small premium required, but must be fond of drawing and industrious.—Barrett, 23, York Place, Baker Street.

WANTED in the Midlands for artificial stone business and fireproof construction, good all round, smart, energetic ENGINEER, able to manage workmen and influence business; preference given to one having experience and knowledge of stresses and strains. Apply in confidence, stating salary required, and give full particulars to S. G., c/o Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

WANTED WORKING YARD FOREMAN AND TIME-KEEPER in large Builder's Yard. One thoroughly capable, energtic, and an early riser. Must live on premises, married, without encumbrances, wife as housekeeper to do plain cooking.—Apply Box 2494, Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

Miscellaneous.

ALL SEEKING APPOINTMENTS.—Poor Law, County Council, Educational, Municipal and other Public Bodies, should send for Classified List of Vacancies throughout the Kingdom.—"The Press" Agency, 155, Duke Street, Liverpool.

BRICKWORK and POINTING Wanted by Rod or Lump. Town or country. Good references.—E. H., 11, Charles Street, Barnes, S.W.

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NOTE.—Advertisements for this page must reach the Office not later than 5 o'clock p.m. on Monday.

TENDERS.—*cont.*

Hull.—For alterations to Trippett Baths, for th Telephones Committee. Mr. Joseph H. Hirst, city architect, Town Hall, Hull:—

Amalgamated Builders, Ltd.	£2,174	0	0
Bowman & Sons, Stamford	2,075	0	0
T. Goates	2,069	0	0
M. Harper	2,060	0	0
Hebblewhite & Wilson	2,045	17	0
Quibell, Son & Greenwood	2,030	0	0
G F. Blackburn	1,997	0	0
Simpson & Son	1,985	0	0
E. Good & Son, Ltd.	1,975	13	0
J. Sangwin	1,962	0	0
F. Southern	1,910	17	8
J. R. Woods, Witham	1,894	9	0
Hull General Builders, Ltd.	1,885	13	5
G. Jackson & Sons, Witham	1,868	11	0
F. Singleton,* Witham	1,825	0	0

* Accepted. [Rest of Hull.]

London, N.W.—For the erection of a sorting office at Kentish Town, for H.M. Office of Works, &c.:—

		A.
W. Hooper	£3,300	£20
General Builders Co.	2,[illegible]59	10
Gould & Maud	2,897	25
C. Gray-Hill	2,795	25
Braid, Pater & Co.	2,747	—
J. F. Holliday	2,739	40
B. E. Nightingale	2.738	—
J. W. Jerram	2,723	30
E. Lawrence & Sons	2,721	15
G. Godson & Sons	2.669	63
C. Dearing & Son	2.6[illegible]5	—
W. H. Lorden & Son	2,588	[illegible]
H. Flint	2 587	—
Speechley & Smith	2,570	20
Treasure & Son	2,562	25
Spiers & Son	2 549	18
H. Watt & Co.	2,529	13
Edwards & Medway	2.527	20
Thompson & Co.	2,500	—
F. Bull	2,498	—
Foster Brothers	2,496	10
L. F. Lamplough	2,471	40
W. Lawrence & Son	2,449	25
J Shelbourne & Co.	2,434	48
E. Brown & Son*	2,354	20

* Accepted. A. Credit for old materials.

Pickering (Yorks).—For laying about 5½ miles of 4in. and 3in. cast-iron water-mains, with the construction of impounding chambers, balancing tanks, and a service reservoir, together with the supply and delivery of 203 tons of cast-iron pipes and fittings for the Thornton Dale water supply, for the Pickering Rural District Council. Mr. J. E. Parker, A.M.I.C.E., engineer, Post Office Chambers, Newcastle-on-Tyne:—

J. H. Hampton-Mathews, Harrogate	£3,906	14	4
R. A. Crowe, Manchester	3,526	5	3
G. K. Waghorn, Redcar	3,481	8	5
W. Carr, Gosforth, Newcastle-on-Tyne	3,018	18	3
T. Bell, Market Weighton	2,979	19	9
H. Shardlow, Nottingham	2,953	14	7
Hardy & Atkinson, West Hartlepool	2,9[illegible]6	8	7
W. Baker, Keighley	2,926	17	1
C. Birkill, York	2,351	0	6
C. Bushby & Son,* Preston-Leyburn	2,500	0	0
Iron pipes only.			
Birtley Iron Co., Birtley	1,235	2	0
E. & W. H. Haley, Bradford	1,223	0	0
A. S. Cloake, Holborn, London	1,151	4	2
Acklam Foundry Co., Middlesbrough	1,150	13	2
Fittings only.			
Blakebrough & Sons, Brighouse	220	10	0

* Accepted.

Redhill.—For the erection of a dwelling-house on Redstone Park, Redhill, for Mr. J. T. Grellier. Mr. A. Waring Venner, architect, Redhill:—

Elsey & Sons	£1,360	0
C. Parsons	1.320	0
E. Worssell	1,225	0
J. J. Pink	1,191	0
J. White	1,179	10
R. Wallace	1,178	0
W. Wickman,* Reigate	1,135	0

* Amended and accepted at £1,100.

Redhill.—For the erection of a dwelling-house on Redstone Park, Redhil, for Miss L. Brown. Mr. A. Waring Vener, architect, Redhill:—

Buckland & Waters	£1 486
E. Worssell	1,450
W. Wickman,* Reigate	1,319

* Accepted.

Southampton.—For erecting the superstructure of their new electricity supply station on the Western Shore, for the Corporation. Mr. J. A. Crowther, borough engineer:—

F. Osman	£14,500
Dyer & Sons	12,500
Mussellwhite & Sons, Basingstoke	£12,390
Jenkins & Sons, Ltd.	11,664
Hughes & Stirling, London	11,225
H. Stevens & Co.*	11,138

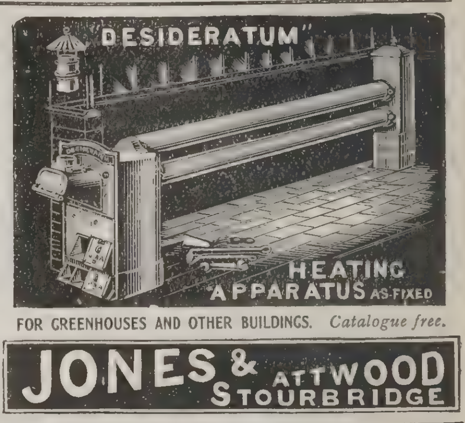
* Accepted. [Rest of Southampton.]

Teignmouth.—For the erection of a Sunday school attached to the church, for the Teignmouth Congregational School Building Committee:—

Marshall, Birmingham	£3,530
Blatchford, Torquay	1.850
Mumford Torquay	1,849
Mills, Newton Abbot	1,8[illegible]5
Francis, Teignmouth	1,795
Andrews, Teignmouth	1.750
J. J. Hayman,* Teignmouth	1,745

* Accepted

(*Continued on page* xxxvi.)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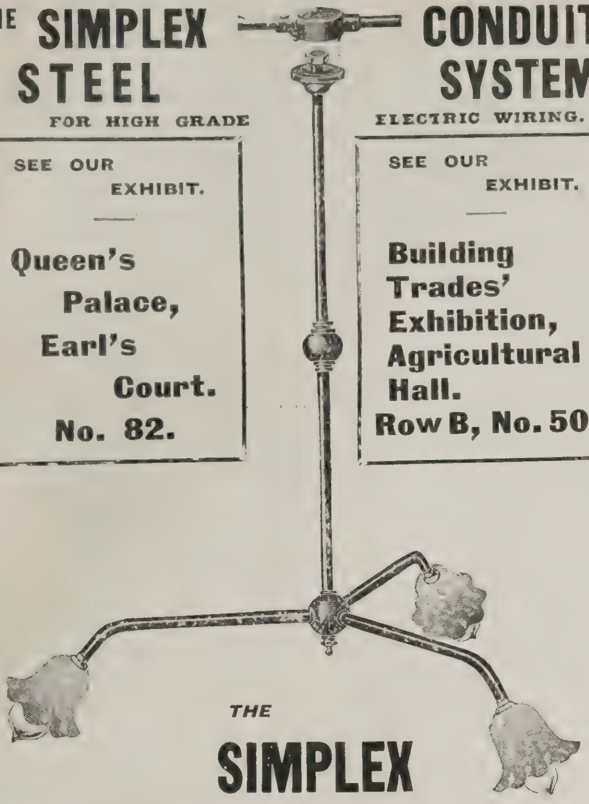

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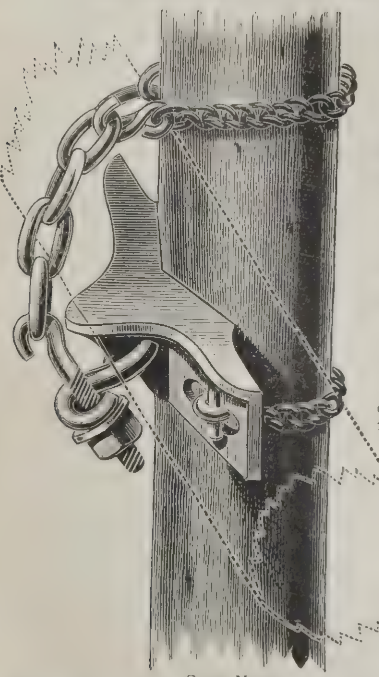

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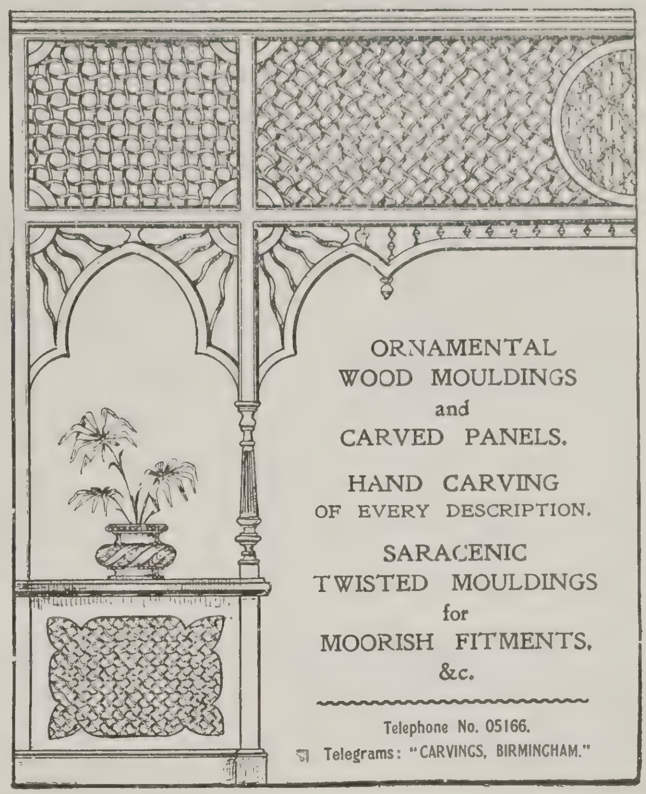

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Redhill.—For the erection of a dwelling house on Redstone Hill, Redhill, for Mr. W. H. Fowler. Mr. A. Waring Venner, architect, Redhill:—

A. B. Wiles	£1,425
Buckland & Waters	1,350
A. B. Amos	1,345
J. J Pink	1,319
R. Wallace,* Merstham	1,178

* Accepted.

Reigate.—For the erection of a dwelling-house on High Trees Park, Reigate, for Mr Richard Adams. Mr. A. Waring Venner, architect, Redhill:—

Nightingale & Sons	£2,050
Elsey & Sons	1,99;
E. Worssell	1,98;
King & Sons,* Reigate	1,910

* Amended and accepted at £1,950.

Shepshed.—For the erection of a new bank and house at Shepshed, near Loughborough, for the Nottingham and Notts Banking Co., Ltd. Mr. Albert E. King, architect, Baxter Gate, Loughborough:—

J. Hutchinson & Son	£3,000
W. F. Harding, Loughborough	2,885
T. Barker & Son, Loughborough	2,860
E. Orton, Coalville	2,854
W. Moss & Sons, Loughborough	2,850
W. Moss, Coalville	2,753
A. Foulks,* Loughborough	2,730

* Accepted.

Slough.—For the erection of two new houses and shops at Slough (High Street), for Messrs. Nevile, Reid, & Co. Mr. J. G. Carey, architect, Windsor:—

Goddard & Son	£2,860	Hollis & Son	£2,678
E. K. Willett	2,798	J. Deverill	2,584
A. H. Reavell	2,774	H. Bowyer	2,528
Burfoot & Son	2,700		

Tilbury Docks (Essex).—For the erection of a new school for 400 boys and a caretaker's house at Tilbury Docks, Essex, for the Chadwell St Mary School Board. Mr. James Thompson, architect, 12, St. Vincent Road, Southend-on-Sea:—

S E. Moss, Southend	£10,120
Foster Brothers, S.E.	10,111
W. King & Son, Westminster	9,914
W. Parmenter, Essex	9,797
A. E. Tong, Gravesend	9,739
J. Brown, Grays	£9,700
S. Parmenter, Essex	9,693
J. Shelborne & Co.	9,469
W. Lawrance & Son N.	9,149
E. West, Chelmsford	8,968
H. J. Carter, Essex	8,720
Davis & Leaney, Southend	8,547
F. & E. Davey, Ltd.,* Southend	8,397
Dobson & Davison, Stanford le-Hope	8,364
W. E. Davey, Southend	7,996

* Accepted.

Watford.—For the erection of destructor buildings and chimney shaft, for the Urban District Council. Mr. D. Waterhouse, engineer and surveyor:—

Destructor buildings.

W. Neil & Co., E.	£1,412	8	0
J. W. Gray & Co., London	1,295	0	0
C. Brightman, Watford	1,220	0	0
J. Willmott & Sons, Hornsey	1,100	0	0
G. & J. Waterman	1,180	0	0
R. L. Tonge	1,174	14	4
Myall & Upson, Clacton-on-Sea	1,166	15	0
H. Brown	1,027	0	0
Clifford & Gough*	969	0	0
Townsend & Coles, W.	966	19	11

Chimney shaft.

R. L Tonge	2,754	12	9
G. & J. Waterman	2,537	0	0
C. Brightman	2,500	0	0
Myall & Upson	2,411	5	0
J. Willmott & Sons	2,237	0	0
H. Brown	2,170	0	0
W. Neil & Co.	2,140	13	8
J. W. Gray & Co.	1,981	0	0
Townsend & Coles	1,877	15	9
Clifford & Gough	1,839	0	0
Custodis Chimney Co.,* London	1,260	0	0

[Note.—Messrs. Custodis tendered for their own type of shaft. Rest of Watford.]

* Accepted.

Windsor.—For the erection of a house and shop at 28, Thames Street, Windsor, for Mr. A. H. Thornton. Mr. J. G. Carey, architect, Windsor:—

A H. Reavell	£1,493	E. K. Willett	£1,360	0
H. D. Bowyer	1,479	Burfoot & Son	1,332	10
Goddard & Son	1,397	Hollis & Sons	1,248	0

* Accepted.

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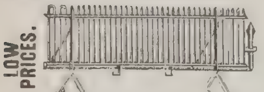

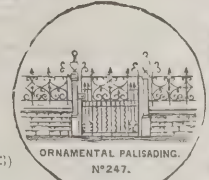
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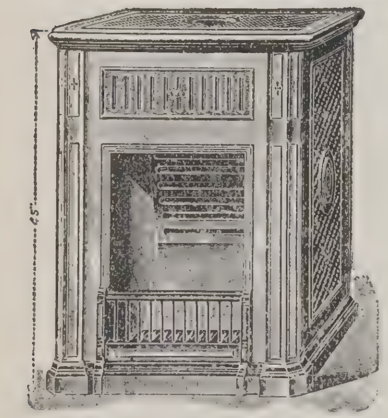

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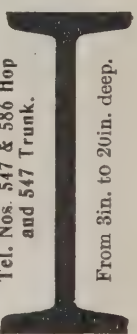
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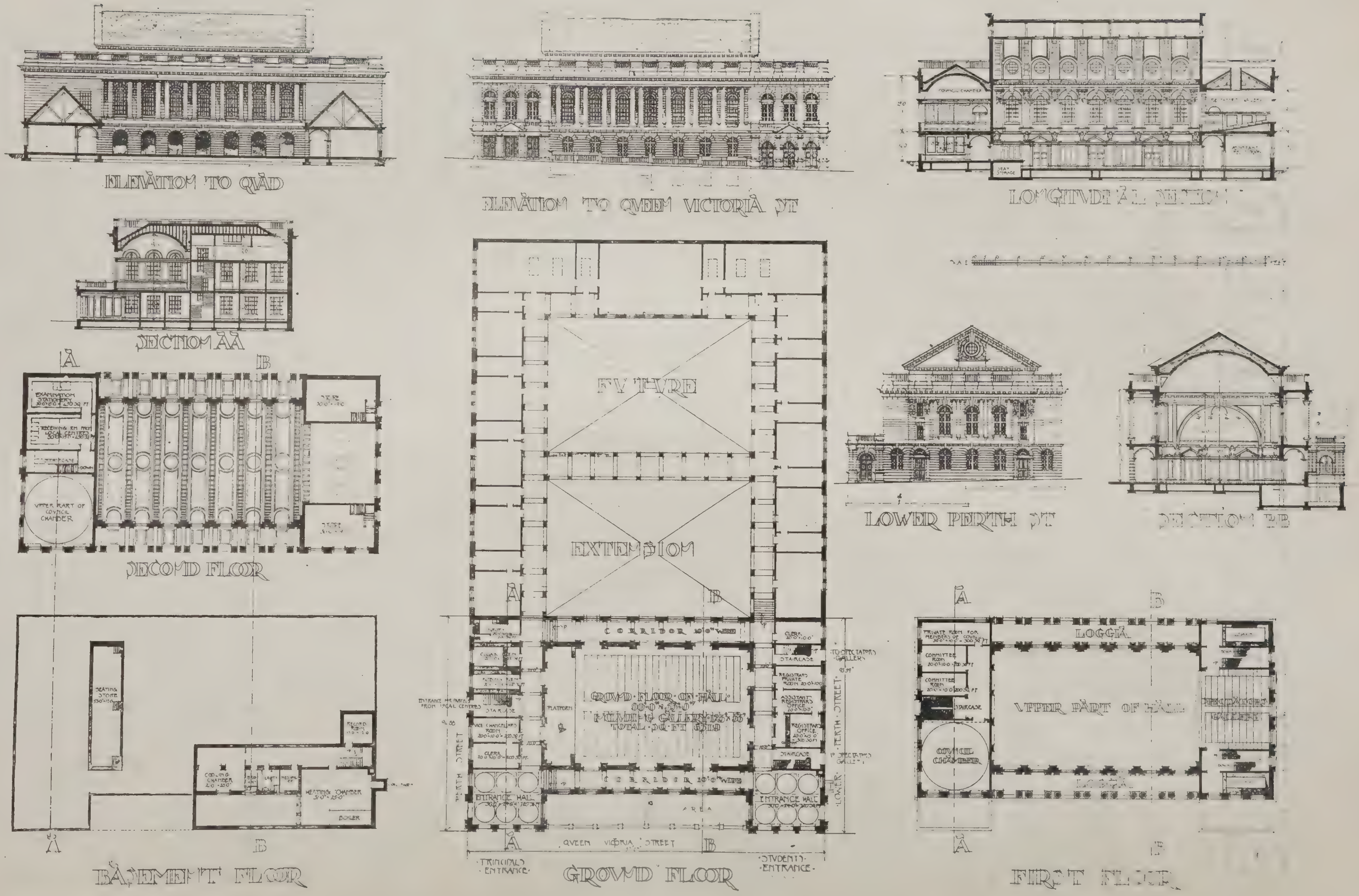
THE
BUILDERS' JOURNAL
AND ARCHITECTURAL RECORD.

June 24, 1903. Vol. 17, No. 437. 9, East Harding Street, E.C.

Standardizing Bricks. There seems every prospect that the standardization of bricks will soon be a *fait accompli*. The R.I.B.A. has been taking an active interest in the matter for the past year or two, and has had before it facts and expressions of opinion from all branches of brickmakers, architects, engineers and builders. It will be remembered that a conference on the subject was held at the Building Trades' Exhibition two years ago, when a tentative standard was suggested. Since then everything has been done to meet the objections raised, and at the second conference which was held at the Exhibition on Friday last a very satisfactory and amicable tone prevailed: so that the recommendations of the Institute were agreed to without dissent. These recommendations are as follows:—The length of the brick should be double the width, plus the thickness of one vertical joint. Brickwork should measure four courses of bricks and four joints to a foot. Joints should be ¼in. thick; and an extra $\frac{1}{16}$, making $\frac{5}{16}$, for the bed joints to cover irregularities in the bricks. This gives a standard length of 9¼in. centre to centre of joints. The bricks, laid dry, to be measured in the following manner: (A) Eight stretchers laid square end and splay end in contact in a straight line to measure 72in.; (B) eight headers laid side to side, frog upwards, in a straight line to measure 35in.; (C) eight bricks, the first brick frog downwards and then alternately frog to frog and back to back, to measure 21½in. This is practically the same standard size as that proposed two years ago, but the all-important margin of 1in. less as to (A) and ½in. less as to (B) and (C) has now been allowed, which does away with the most serious objections. The above standard is to apply to all classes of walling bricks, both machine- and hand-made. It cannot of course be forced on brickmakers or others, but we understand the Institute will strongly urge architects to regularly specify the standard size. The engineers, too, have given their support to the proposal—in fact, to everyone concerned the standardization of bricks must be a blessing. At present it is apparently more particularly intended to apply to London and neighbourhood, but the final aim is to secure uniformity throughout the whole kingdom. Naturally this cannot be done at once; it is a matter of time; but that is the end to work for, and we were glad to see how favourably the proposal was received at last Friday's conference by representatives from many parts of the country. The Belfast Brickmakers' Association, after being in consultation with the Ulster Society of Architects and many other architects in the north of Ireland, express their approval of the scheme, so that already it has gone far beyond the radius of the metropolis: a fact which is especially significant when it is remembered that the bricks used in Belfast, as in Glasgow and Edinburgh, are very much larger than those used in London. Naturally there are many details which time alone will settle. But if architects will only make it a point to specify the standard size of brick, and see that such is delivered, the whole of the makers will very soon fall into line. At present with bricks of varying sizes it is quite impossible to stock terra-cotta, a disadvantage which would of course be removed were all bricks of one standard. It is worthy of note, as showing how the varied interests are agreed, that among those present at last Friday's meeting—at which the Institute's recommendations were unanimously adopted—were Mr. J. C. Hill (president of the Clayworkers' Institute), Mr. S. E. Collier, of Reading, Mr. King (president of the Institute of Builders), Mr. A. T. Walmisley, the well-known civil engineer, Mr. G. E. Wragge (Eastwood & Co.—Kentish brickmakers), Mr. Bernard J. Dicksee, district surveyor for Newington, Mr. Max Clarke, Mr. R. Leah (president of the Manchester Society of Brickmakers), Mr. H. H. Bartlett (Perry & Co., Bow), Mr. Anderson and Mr. Jeffrey, of Gloucestershire, and M. Arthur Metz (president of the Union Céramique de France)—Mr. Thomas Blashill occupying the chair, supported by Mr. H. D. Searles-Wood.

An R.I.B.A. Week. The general meeting of the Royal Institute of British Architects (and the presentation of the Royal Gold Medal) on Monday, the annual dinner yesterday, and to-day's meeting of the presidents of the eighteen allied societies by invitation of Mr. Aston Webb—all suggest to Mr. Butler Wilson the establishment of an annual R.I.B.A. week in London, and elsewhere as might be determined, following the custom of other institutions. A special week of this nature, says Mr. Butler Wilson, could be made a distinct benefit and attraction to members of the Institute. "Promoters of special exhibitions dealing with matters connected with architecture and the kindred arts would quickly find it to their interests to make their displays coincide as to time and place with such an event." And he suggests the following programme:—Monday: Exhibition of prize drawings, visits to exhibitions and displays of handicraft, materials, &c., general meeting and presentation of Gold Medal. Tuesday: Visits to buildings completed or in course of erection, and president's "At Home." Wednesday: Meeting of presidents of allied societies with president of the Institute, special papers and discussions, annual dinner. Thursday and Friday: Excursions to places of interest. We commend Mr. Butler Wilson's suggestion to the Institute. It has every prospect of affording a socially enjoyable and architecturally useful week.

Popular Opinion about Westminster Cathedral. While architects of ability are expressing their great admiration for Bentley's cathedral — brought into being through the energy of Cardinal Vaughan, so lately dead—the general public are voicing quite other views. Not long ago an Oxford paper, commenting on the gale in London, observed that unfortunately the wind, though likely to blow away several hastily-erected suburbs, was not strong enough to remove the tower of the new Roman Catholic cathedral at Westminster; while another gentleman, who admits in the columns of the "Pall Mall Gazette" that he is neither an architect nor an artist, calls the building "a glorified public baths or waterworks, pumping station, chimney and all." Such criticism is mere claptrap, the expression of ignorance and of vague likings, of sentimentalism and architectural bosh. These "common-sense" critics look up at the great campanile rising nearly 300ft. into the air, and having the idea rooted in their mind that the tower of a church must be covered with pinnacles and crockets, they declare themselves as well pleased with a chimney stalk; they have absolutely no sense of its fine proportion, nor of the relative placing of the masses around it. It is nothing more to them than a chimney stalk, which they take for granted must be an ugly thing, just as they take for granted a profusely decorated building, casket, or what not, must be beautiful. And these are the very people who have unstinted admiration for some of the most appalling buildings. England is a free country, no doubt, and everyone has a right to express his own opinion: nevertheless the man in the street should be told that Westminster Cathedral will outlive all his ignorant opinions, and that a magnificent structure into which a great architect has built his life demands more respect than some percentage design of mediocrity.



SECOND-PREMIATED DESIGN FOR UNIVERSITY BUILDINGS AT CAPE TOWN. J. EDWIN FORBES, ARCHITECT.

THE REFORM OF ARCHITECTURAL COMPETITIONS.*

By JOHN MURRAY, F.R.I.B.A.

I HAVE pleasure in laying before you for your consideration my views upon this important subject; they are, however, not all new nor original, and it is not my intention to touch upon every point which might be discussed, but only upon those main facts which appear to me to chiefly bear directly upon the system and its evils, and the effective reforms required to put architectural competitions upon a sound and secure basis which will be acceptable and satisfactory both to the public and the architectural profession.

In the first place, let us have a practical definition. What is an architectural competition? It is a tempting bait cast forth by keen businesslike promoters to an overworked and underpaid profession.

This burning question of competition reform is continually before us, and judging by the various opinions of architects which we hear and read almost daily the solution of the problem seems up to the present to be but little nearer. It is generally admitted—and I agree—that architectural competitions, both open and limited, when properly conducted are a benefit to the art of architecture, but that the present method of carrying them out is unsatisfactory; and it is urgently desirable to obtain some reform in their arrangement and administration. Competitions appear to have been originally instituted without sufficient consideration of the subject in all its bearings both on the part of the promoters and the competitors, and the time has now arrived when the subject can be fully considered and some permanent arrangement arrived at which will be satisfactory to all concerned.

The solution of the competition problem appears to me to rest entirely with the architectural profession, which must combine and work together to obtain effective reformation. We have a competition committee of the Royal Institute of British Architects, and a council to guide us, and yet no adequate, sufficiently definite and common procedure has yet been formulated by them for the guidance of promoters of competitions and architects generally. How often we see members of the Institute appointed advisers and assessors, and the procedure of the competitions under their guidance very different. Some common course of action should be adopted by the profession, and if such were made known to those promoting competitions (who are generally ignorant of the subject) good results would undoubtedly follow. Effective reformation in this matter can only be obtained by drastic measures, and these should strike at the root of the defects.

In arranging any scheme of reform there is the all-important side, the interests and the authority of the public and promoters to consider as well as those of the architectural profession. Fairness I am quite sure is the desire of all, and what the public and promoters obtain they would, I feel convinced, be willing to pay for reasonably. Lack of knowledge on the part of the promoters is a fruitful source of the existing evils. If a reasonable payment were demanded by a united profession for competition work, promoters would not so lightly undertake the compilation of such vague conditions and issue such unfair invitations to architects as they have generally hitherto done.

Under the present system what an enormous amount of time, labour and money is so often expended by a number of architects upon designs for a building, the total cost to the profession amounting to thousands of pounds, while the payment made by the promoters through an inadequate system of premiums is often only a very small percentage of the total cost of the work done by the competing architects. We have seen sometimes that the design placed first has broken some important condition, which condition has deterred a more honest competitor from planning the building upon the lines of the winning design. It has sometimes happened, although in future by careful conditions it should be made almost impossible, that a design could be materially improved and a much better solution of the problem obtained by overthrowing an important condition, and I consider the promoters should be able to obtain, if they wish, the benefit of a design thus improved; but in such a case let assessors be fair, fearless and bold in their award. Let the award of the first place be given to the best design which is in accordance with the conditions of the competition, and let assessors boldly show to the promoters the superiority of the design which has violated the conditions, and even go so far as to advise its execution if they think fit. Then let the promoters acquire and carry out the design which has transgressed, if they wish, but compel them in such a case to adequately compensate the competitor whose design was placed first by the assessors, and which has fulfilled the conditions laid down. This would give the promoters liberty of action, which they should have even after the assessors' award and advice be given, but it would give the promoters no more than they often reserve at present, and to which they should I think have a right. Promoters should be in a similar position to a private client, who can do, and often does, as he pleases after the advice of his architect has been given, but he nevertheless has to pay for all the work done for him. If the promoters, however, were at first to definitely agree by their conditions to appoint the architect to carry out the work whom the assessors advised, there is no doubt the promoters would gain by obtaining more and probably better designs.

PERSPECTIVE VIEW OF SECOND-PREMIATED DESIGN FOR CAPE - UNIVERSITY.

The following are, I consider, indisputable facts which show the unsatisfactory position of the existing state of things:—

1. The system of architectural competitions has developed gradually without any general definite and logical rules being applied to it by any responsible and sufficiently enlightened authority—the inevitable result of which in most similar matters is chaos; and that is what practically now prevails in this case.

2. It is absolutely essential for the promoters to receive some good professional advice in order to frame proper conditions for a competition.

3. The system of offering two or three premiums is not satisfactory, and from this arise many evils.

4. The promoters are generally not cognizant of all the regulations which are necessary to compile a proper set of conditions for the design required; and if an architect be engaged to advise upon the conditions, even he is not infallible in dealing with such a complex subject.

5. The one-man assessor has proved to be unsatisfactory in numerous cases.

6. Architects compete in order to obtain the work, and not to win the inadequate premiums usually offered.

7. The premiums usually offered are totally inadequate to pay reasonably for the large amount of work required by the conditions.

8. The combined amount of work done and money expended by architects upon competitive designs is undignified, and is not calculated to serve the best interests of the public, the art of architecture and the architectural profession.

9. The large amount of work done and the vast amount of time spent by individual architects in preparing competitive designs by the existing system is often very costly, and also entails the loss of a large amount of time and money to the profession, which should be used in other directions—*inter alia*, to assist in raising the dignity and influence of the art of architecture, and in physical recreation, which it is so imperative for an architect to take for his health's sake.

10. Sometimes an impossible condition is framed. One in point is demanding a building of a fixed and stated size to cost a fixed sum when the size demanded cannot possibly be erected for less than about 25 per cent. more than the limit of cost stipulated.

11. A competition is very often won in consequence of the first few main setting-out lines of the plan being correct, and which indicate the right and best scheme because from them proceeds the whole design, and the most artistic building and best architecture invariably emanate from the best plan.

12. It is not always the best or most skilful architect who wins a competition, but the one to whom the best scheme of the main disposition or setting-out has occurred; and although this is only obtained sometimes after much work in testing every possible solution, and is often the outcome of an immense amount of thought and skill, it is not always so.

13. The best and most eminent architects are frequently too busy to undertake so much

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* A paper read before the Committee of the Competition Reform Society on May 15th, 1903.

work as is demanded by the present system of competitions.

14. Many young architects of much ability, and even perhaps genius, have neither the time nor the money to spend upon the lavish competitive designs which are now fashionable.

15. The average architect who makes a practice of entering competitions wins so few that the total payment derived eventually from those he wins does little more than pay a small pittance for all the competition work he has designed, the result of which, like the unfortunate limit of 5 per cent. payment (which should be raised), is poverty, and thus another step towards the ignominy of the profession generally.

16. The result desired by promoters should be, and avowedly is, to obtain the best design possible under the conditions of the special case, and also the best architect for the work; but under the existing system it frequently occurs that neither of these is obtained.

17. The designs awarded premiums have sometimes not been in accordance with the conditions which have been laid down as rigidly binding upon competitors.

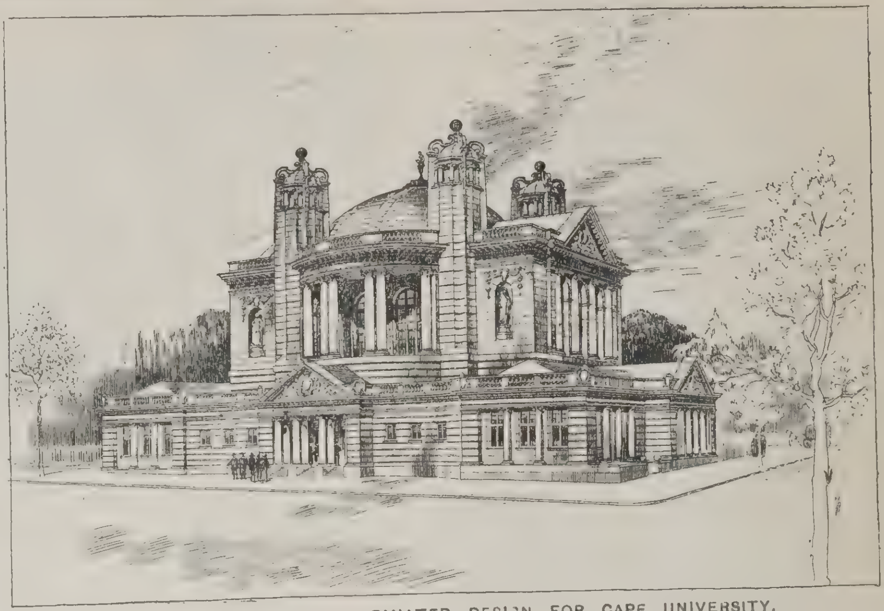
18. All the intricacies of an extensive building problem have sometimes not been fully seen nor known to the promoters, nor to the assessor or adviser when drawing up or advising upon the conditions for a competition, and some important point has been discovered by a competitor whilst working out the scheme which has been most beneficial to the whole design, although it has revolutionized some of the original conditions. This should, however, in the future be possible upon very rare occasions, as the conditions could be framed to prevent it.

In view of the foregoing facts I am constrained to suggest the following reforms for the consideration of the Competition Reform Society and the profession generally, and I am convinced that by the assistance of these or somewhat similar reforms a mitigation of the present evils can to a very considerable extent be obtained, and I think probably they can be entirely eliminated.

1. The Royal Institute of British Architects through its council should take the lead in redressing this professional grievance, and should formulate and publish some definite rules or regulations to guide promoters, assessors and competitors; and without the concurrence of the promoters in these, all members of the Institute and its allied societies, at least, should abstain from the competitive work, and the Institute should communicate with all its members requesting them to do so. This might also be made a definite condition for future candidates for election to the Institute to undertake before, or as a condition of, their election. The penalty to be inflicted upon any member of the Institute and its allied societies for breaking any of these rules should be dismissal from their membership.

2. Every assessor should approve the conditions before accepting his appointment, or make his acceptance conditional upon his approving the conditions proposed by the promoters, and unless the conditions be framed in compliance with the Institute rules or regulations no member of the Institute or of its allied societies should accept an assessorship. The conditions should be so framed that they form a definite and binding agreement between the promoters, assessors and competitors.

3. There should be a jury of three assessors, two of whom should be architects and the third a specialist appointed by the president for the time being of the Royal Institute of British Architects, because the innate conservative instincts and diverse opinions of Britons will not always permit one British architect to judge and arrive at a satisfactory and unbiased conclusion upon such a complex subject, which involves a combined knowledge of art, science and business. The design placed first by the jury must be in strict accordance with the conditions, and should be accepted by the promoters; they, however, reserving the right to acquire and carry out any other design they please, provided they compensate fairly the competitor whose design be placed first by employing him as architect to carry out the building or work. This would prevent any possible chicanery such as has been known to exist, and the architect placed first by the jury would be doubtless as capable —probably much more so—than the competitor who had violated the conditions. In order to adjudicate fairly upon some designs it would be of the greatest possible assistance to receive an engineer's or other expert's opinion, and this jury system would fully meet such a contingency.


PERSPECTIVE OF THIRD-PREMIATED DESIGN FOR CAPE UNIVERSITY.

4. The fee to be paid to the jury should be higher than at present prevailing, and a scale might be arranged by the Institute which might be regulated within limitations by a percentage of, say, one guinea per cent. upon the cost of the building or work proposed to be done, plus a fee of, say, one guinea for each design submitted, and the total equally divided among the jury.

5. The conditions should require small-scale sketches only to be submitted in a first competition to show the general scheme of the design, and such sketches should be limited to pencil only, and not be elaborately finished in any way, nor any unnecessary work repeated thereon. The scale should be one-sixteenth of an inch to 1ft. or less.

These sketches could be done quickly, and with very little or no expense to the competing architects, but they would doubtless contain very fully the architect's own personal handiwork and embody all the main ideas of the design, which would be sufficiently intelligible to the assessors.

6. The sets of sketches submitted should be examined by the jury, and the best selected by them if there be perfect unanimity in their opinion, or, failing this, they should select a few of the best designs, about six, more or less, according to the necessities of special cases, and the designers of these should be requested to enter a second competition in which more finished drawings should be required, and the work then demanded should be no more than it is customary to require by the existing system, and unnecessary repetition should be prohibited. The selected sketches should be marked or photographed and returned to their respective designers, who should send them back again unaltered with their more finished designs. A perspective drawing should not be required unless in a very exceptional case, and then it should be drawn by every competitor from one definite and fixed point of view. The jury should jointly examine these more finished designs in conjunction with their original sketches, and select the design which in the opinion of the majority of the jury is the best, and report their selection to the promoters. There should be no selection of a second and third design, a proceeding which is fraught with great difficulty and danger; and there should be no award of premiums by the jury, for they are neither necessary nor desirable. A copy of the jury's report should be given to each of the six, more or less, selected architects. The unsuccessful sketches should be returned to their respective designers after the final award be given in the second competition, and the name of the successful architect be announced to each competitor.

7. A sum equal to the total amount now usually awarded by the two or three premiums usually offered, or somewhat more, should be equally divided between the six, more or less, selected competitors as expenses, and upon receipt of their more finished designs, and the amount so awarded to the successful competitor should not merge in the commission or payment for the work if it be subsequently carried out.

In case the work be abandoned or be not proceeded with within twelve calendar months after the award be given, at the request of either the promoters or the competitor whose design was placed first by the jury a payment should be made by the promoters for the competition drawings of the said competitor, whether they be those done in the first or both first and second competitions, amounting to a sum equal to 2 per cent. upon the estimated cost of the building or work, and after such payment the said competitor should have no further claim upon the promoters.

Any subsequent business done by or between the promoters and the said competitor to be by a new and agreed arrangement, as if the competition had not been held.

8. In limited competitions the same arrangement should be adopted as embodied in the preceding clause.

9. The first-selected design only should become the property of the promoters, and that only when they have fulfilled their part of the conditions and employed its designer to carry out the work or paid the sums set out in the conditions. If the promoters desire to acquire any of the other designs

besides the one adjudged the best by the jury, they should have power to do so by paying the designer of the work required a fee of 1 per cent. upon the estimated cost of the building or work as proposed by the promoters, but the architect whose design was placed first by the jury should be employed to carry out the work.

10. The Institute should take steps to obtain and examine systematically the conditions of all published or known competitions, and all architects, or at least all members of the Institute and its allied societies, should abstain from competing in all cases where the conditions have been disapproved by the Institute — such disapproval to be made and publicly advertised by the Institute as may be hereafter determined.

Generally.—By this system which I have suggested the promoters would obtain the best architects and the best designs; there would be little or practically no loss of time and money to the profession; and I claim that the system is commercially sound.

The young men, older practitioners and busy architects could all compete without detriment to themselves or their work, and the promoters would thereby obtain better designs and more talented architects than is often possible by the existing system.

The promoters, after laying down conditions and obtaining designs, would have to pay the successful architect some compensation if they changed their views and selected another design, or failed to carry out the building; but they would lose nothing, as they would be only paying fairly for the work they caused to be done, in a similar way that a private client would do after giving instructions to his architect.

There is at present too much conservative individualism and not sufficient combination amongst architects upon this whole subject, and it is only by a strict adherence to the principles embodied in the old adage "Union is strength" that a successful solution of the competition difficulty will be eventually obtained. This almost universal unity of action we see around us to day on all sides, but it is not prevalent amongst architects, who are unfortunately far behind in this most desirable quality. We need more *esprit de corps* amongst us, and a more universal desire to work for the common good of the public and the profession as well as for ourselves individually.

The past history of competitions does not help us much except to prove the existence of their inherent evils from the beginning.

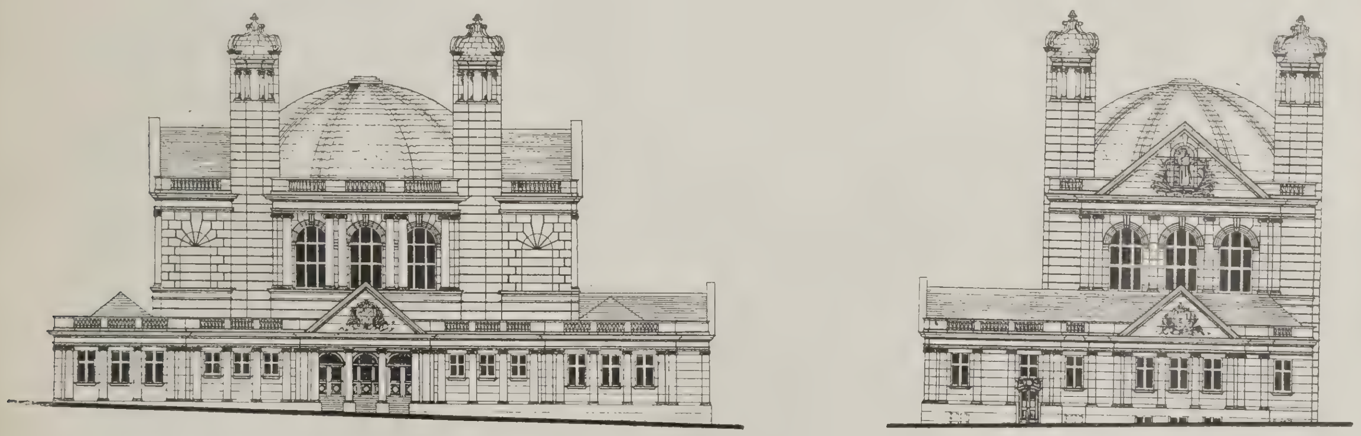
I have searched for some of the earliest records extant upon this subject, and have studied many of them. I have found that many years ago a special committee of the Royal Institute of British Architects was appointed to enquire into the subject of competitions, and they reported to the Institute on February 24th in the year 1839, about five years after the Institute was founded, and when Earl de Grey was president, Charles Barry vice-president, Thomas L. Donaldson hon. secretary, and the Institute contained such distinguished men as Messrs. Gwilt, Hardwick, Papworth, and others equally honoured.

The conclusions of that committee embodied complaints which were very similar to those we hear on every hand to-day, and the committee then and the Institute itself from that day until now have failed to effectively tackle and solve the one necessary and all-important point, namely, of formulating a system which will put competitions upon a satisfactory basis. No one has hitherto had the courage to thoroughly face this difficulty, although apparently it has always been admitted that the problem can be solved by a united profession.

I will now give you a few extracts from the report of that committee, and a few notes of mine thereon, by which you will see the unsatisfactory and incomplete condition in which the Institute then left the subject, and it has remained in a very similar condition with comparatively little improvement from the 24th day of February, 1839, until the present, being a period of upwards of sixty-four years. The council of the Institute reported upon competitions on May 6th, 1844; Mr. Cole A. Adams instituted a memorial which was presented by Mr. Street to the Institute in the year 1880; the conference of architects submitted some resolutions to the Institute on May 23rd, 1881; several papers have been read upon the subject, but all have failed to formulate an effective remedy which will eradicate the inherent evils.

"Your Committee are deeply impressed with a sense of the great and manifold evils arising from the defective system upon which competitions have been hitherto conducted, not only as regards the parties immediately concerned in them, but also the general interests of the public and the reputation of the profession at large; since it is abundantly proved that men of eminence are deterred from entering into competitions under a system which experience has taught them involves inherent principles of injustice.

". . . and it appears to your Committee that some endeavour at least to remedy them is required for the interest both of the public and the profession. As to the policy of competitions in general or the comparative advantages of open or select competitions, your Committee do not feel called upon to give an opinion. They conceive their duty to be limited to the investigation of the system as it exists. They avoid the consideration of any evils but those they consider inherent in it. They suggest no remedies for these evils but such as they think



ELEVATION·TO·QVEEN VICTORIA·STREET

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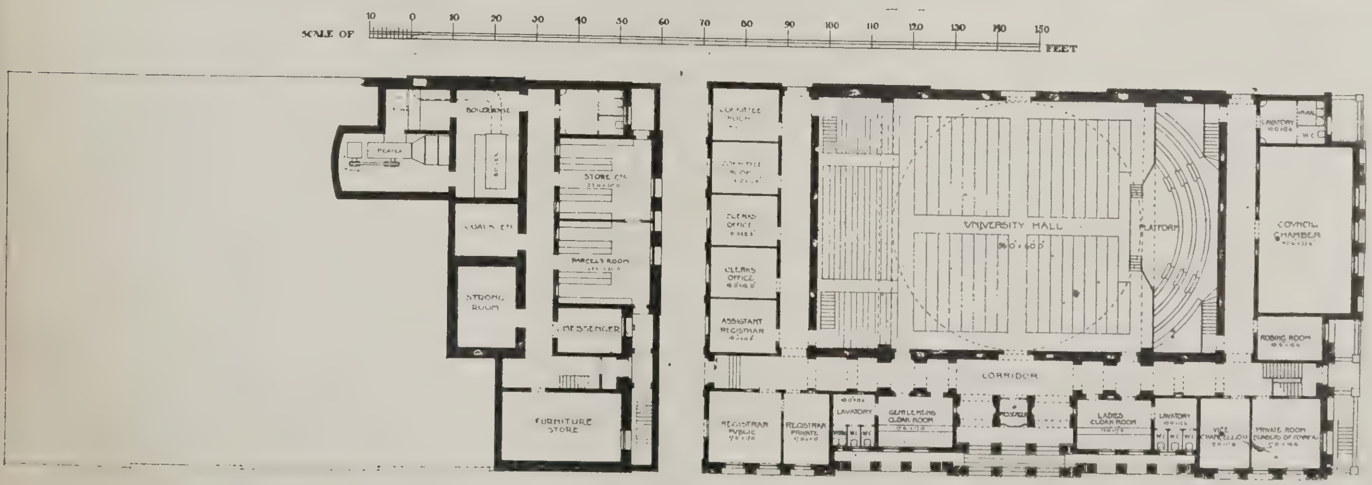


BASEMENT PLAN

GROVND·PLAN

THIRD-PREMIATED DESIGN FOR UNIVERSITY BUILDINGS AT CAPE TOWN. EDMUND W. WIMPERIS AND HUBERT S. EAST, ARCHITECTS.

the public will feel it to be their interest to adopt. They insist upon none but those which it lies within the power of the members of the profession to apply; and they think it not too much to expect from the Royal Institute of British Architects—an association founded and incorporated with the express object, among others, of promoting the interests of architecture—that they should interfere to the point of adopting and confirming their opinions thus far.

[I strongly urge that a new system should now be adopted and effectively carried out by the R.I.B.A.]

"Your Committee feel confident that the introduction of a better system by those who have the wish to do justice would be sufficient to crush the power of doing wrong, which has too long been indulged with impunity.

[This system has never been introduced.]

"It rests entirely with the professor to decide for himself whether the conditions, and the personal character of those who propose them, are satisfactory. . . .

[The profession as a body must decide.]

"But whatever the conditions may be, they ought to be clear and explicit, that the competitor may know precisely and unequivocally upon what he has to rely. Whenever it may be expedient to lay down definite instructions, they ought to be strictly adhered to, when judgment is to be founded upon them, and every design rejected which shall be found not to conform to them. . . .

"As the formation of definite preliminary instructions and a decision strictly founded upon them require more experience and knowledge of architecture than miscellaneous committees may be generally supposed to possess, it is suggested that in all cases competent professional advisers should be referred to upon these and other points connected with the duties of the Committee, but without taking the final decision out of the hands of the original parties to the competition or relieving them fro its responsibility. . . .

"Perspective drawings, if correctly made, are certain desirable to show the proper effect of designs, but th should be restricted to specified points of view . . .

"They have the greatest reason to believe, from t information they have obtained, that in a very gre majority of cases of competition* the committees parties to whom judgment is confided are quite ready acknowledge themselves deficient in the means of fu filling their duty, when once the nature of that duty candidly and temperately explained to them; and th any suggestion to the effect above stated will be favou ably received when offered in proper terms and at proper season. But to effect this object rests with t profession at large,† upon whom the Committee wou urge in the most earnest manner the necessity of refusi to enter into any competition which does not offer sufficient guarantee that it will be conducted both wi intelligence and justice. To secure these desirab requisites in competition let every architect exami the conditions . . . and address to the authorised par the most searching enquiries‡ . . .

[* This was before the one-man assessor wa generally appointed. † The profession large cannot act effectively as individual and can only so act through the R.I.B. ‡ This has been left to individuals, but shoul be done through the R.I.B.A. Council.]

"Although the enquiries which may be addressed professional men to the institutors of competition mu necessarily be dictated by the peculiar circumstances every case, yet the following, although merely propos as explanatory of the intentions of the Committee, m be found generally applicable :—

"By whom are the designs to be examined a selected?

"Have any designs been laid before the parti previously to the competition being proposed?

"Have the parties any architect or person professi to be an architect in their employ?

"Will any means be adopted to ascertain that t designs can be executed for the sums estimated?

"Will the parties undertake to lay aside all desig which cannot be executed for the sums estimated?

"Is it the intention of the parties at once to exclu from the competition all designs not in strict conform with their instructions in every respect?

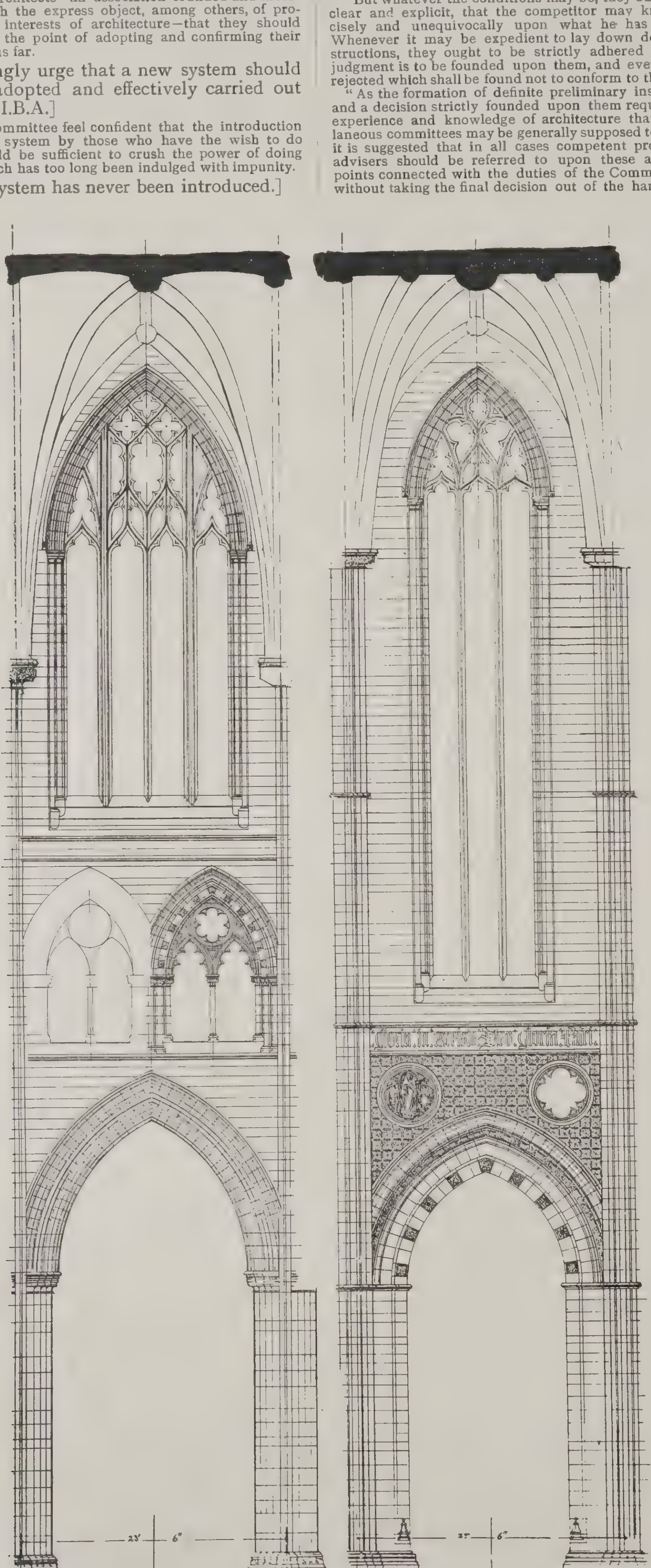
"Will the architect whose design is selected employed to execute the work, provided his charact and standing in the profession be such as to render hi unexceptionable?"

Regarding some shortcomings in th report, I will now only refer to the fact th the committee pointed out serious evils in t system of competitions, and some of the exist until to-day: they suggested remedies for these evils, "but such as th think the public will feel it to be the interest to adopt. They insist upon no but those which it lies within the power the members of the profession to apply."

Now these suggested remedies have prov to be insufficient, and I feel that the re remedy required is to go further and form late such methods of action and such system that not only the public but profession itself, both collectively and i dividually, will feel it to be their interest adopt; and also to insist that these metho of action shall be applied by the Royal Ins tute of British Architects as the governi body of the profession, not leaving remedy to be applied by individual memb of the profession, as this has been tried upwards of the last sixty-four years and h miserably failed.

It appears to me to be the greatest fol that an overworked, underpaid and lon suffering profession has allowed itself remain since the founding of the Royal Ins tute of British Architects under the scou of these competitions, containing ev which have been readily, continually a universally admitted to exist by archite during that long period, and yet sufficiently strong, effective and businessli action has been taken to remedy the ev until this Competition Reform Society w recently established.

There has been since the year 1839 a lo timid and vacillating policy adopted ab this subject by individuals with the cons and approval of the Royal Institute British Architects, and it is now high ti that the Institute should take the lead its and thoroughly work out the whole proble and adopt a strong, combined, vigorous a effective policy upon the matter, which w commend itself to both the public and architectural profession, and which will b solution of and protection from the e which have attended nearly all competiti



Bay of Nave Arcade.

Bay of Choir Arcade.

DESIGN FOR LIVERPOOL CATHEDRAL BY MALCOLM STARK.

since their inception. Some may still ask, Is it possible to solve this problem? I say most emphatically it is possible, and by dignified and honourable methods. Some may hurl at me the accusation that my methods are only a glorified form of trade unionism. I frankly admit there may be some similarity in my suggestions, but it is not necessary, reasonable nor fair to apply such a title to them; and I contend that the requirements of this age, which are very different from those of our forefathers in many respects, demand united action in this matter and upon the best and most forcible lines. Some may urge that my methods would wreck the Institute, but in my opinion they most certainly would not do so: the Institute is now strong and rich enough to thus assert itself and manifest its strength, and anyone who would leave it or hold aloof from it for such a reason could not be imbued with the true interests of our art and progress, and such men would not add any good influence or dignity to the Institute. A simple solution, moreover, could be obtained by the Institute testing the methods I suggest in a few cases, which could doubtless be readily and easily arranged.

I have spoken somewhat strongly, but I consider the theme demands it; I possess the conviction of my opinions as well as proofs of my statements, and I feel sure that it is only by energetic and vigorous methods based upon the lines of those which I have suggested that this difficult problem will be solved. Solved it can be, and solved it should be.

A.A. COMPETITION DRAWINGS.

THE drawings submitted for the Architectural Association competitions are now on view at 56, Great Marlborough Street, W. There were four competitors for the Travelling Studentship (£25, for at least a four weeks' tour), the first place being gained by Mr. Alan G. MacNaughtan and the second by Mr. Vincent Hooper—the drawings by the former are undoubtedly the best sent in: one of the competitors, we notice, gives us a version of "L'Art Nouveau" as spoken in an English drawing-office. For the Silver Medal (£10 10s.) a design for a town hall in a small country town was required. The winning design, by Mr. A. A. Carder, is a tempered piece of work well carried out. Mr. L. G. Detmar secured second place with a design of average merit. "Si Fractis Fortis" is praiseworthy, but "Nihil Sine Labore" shows that even labour does not of necessity give us anything cherishable: while the author of "La critique est aisée et l'art est difficile" (what a fascination lies in pedantic Latin or literary French!) would do well to remember that criticism cometh as well from within as without. Four competitors submitted drawings from the Banister Fletcher Bursary, the first place being awarded to Mr. J. Gillespie for some fairly-well executed drawings of All Saints', Pavement, York; St. Martin's Church, York; The New House, Kinross, and other buildings. Mr. A. A. Reeve has secured honourable mention for some commendable measured drawings of the Horse Guards and the Orangery at Kensington Palace, while the remaining two competitors deserve praise for choosing to measure a fine building which is threatened with demolition—All Hallows, Lombard Street. The Architectural Union Company's prize of £10 for measured drawings is not awarded, while the decision over the Essay prize—subject: the life, work and influence of Robert Adam and his brothers—is not yet given. There was only one competitor for each of these two latter prizes.

Construction Notes.

Wallpaper and Hangings. APART from considerations of the design and the appearance of a wallpaper under certain conditions, the architect should also consider the means of its manufacture and the materials of its composition. Wallpapers and hangings may be divided into two main classes: (1) the printed papers, and (2) the flock and relief. With regard to the first, the printing is done either by hand or machine. In the hand printing the colours of the different blocks are not applied until after the colour is dry, while in those printed by machine the various colours follow on wet, the whole design being printed as the roll of paper passes through the machine. It will, of course, be easily understood from these conditions of manufacture that hand-printed papers have greater sharpness and accuracy, each colour being distinct and separate, while in the machine work they frequently run together more or less. The hand-block printer also has the advantage of being able to print two or three pieces at very little extra expense, whereas with machine-made papers the cost of "setting" a machine is so considerable that it does not pay unless a large quantity of paper is printed, the consequence being that after a year or two it becomes impossible to repair a room with machine-printed paper or to repeat the same design if desired. The flock papers are made by printing on the paper with a cementitious material and then scattering finely-chopped wood fibre evenly over it. As each different colour requires to be worked separately and strewed with wood fibre, the process is, of course, very expensive. The coverings in relief are prepared by a variety of special processes which are to be referred to the general principles of embossing by the application of pressure or moulding when in a plastic or flexible condition, either separate or combined. With regard to the materials of which wallpapers and hangings are composed, the colours are either distemper or oil. The distemper colours have a tendency to fade in sunlight, though much depends upon the colours chosen and the composition. Papers printed in oil colours always darken and yellow—*i.e.*, the ground does—giving a dingy and shabby appearance unless the designer has made allowance for it. When new they are often good in effect, though, I think, they never equal distemper papers. They have one advantage over distemper in allowing a tint to be gradated by the mezzo-tint process. Papers printed in oil colours may be twice sized and then varnished so as to allow washing, but a varnished paper is always unpleasant. Papers sold as varnished ready for hanging should be avoided, for they are varnished with a quick-drying, hard, white spirit varnish, and have very little durability. If a varnished paper is desired it is best to varnish it after hanging. One little point worth noting in connection with varnished papers is—that allowance should be made in the paint of the room for the yellowing of the varnish. In wallpapers from reputable manufacturers there is no danger to be apprehended from poisons in the colouring matters, but from the smaller manufacturers a warranty should be obtained that the green papers are free from arsenic (even then it is best to test them oneself) and that papers of other colours are free from copper or mercury. "Pulp" papers have the back of the paper the same colour as the ground of the front. Papers in which the ground or pattern, or both, have a sheen as of satin are known as "satin" papers, and are made by mixing Spanish white with the colouring matter and polishing it with a burnisher; such papers are very susceptible to damp, and should be protected by a lining paper. The materials of which the coverings in relief are composed are mainly paper, wood, fibre and cloth. One well-known hanging which claims to be the only material solid both in colour and relief is composed of oxidized linseed oil and wood flour mixed with colours and a few minor ingredients. Another is made by placing wood pulp in moulds to a considerable thickness; others are composed of asbestos, canvas or silk refuse.

H. K. D.

R.I.B.A.

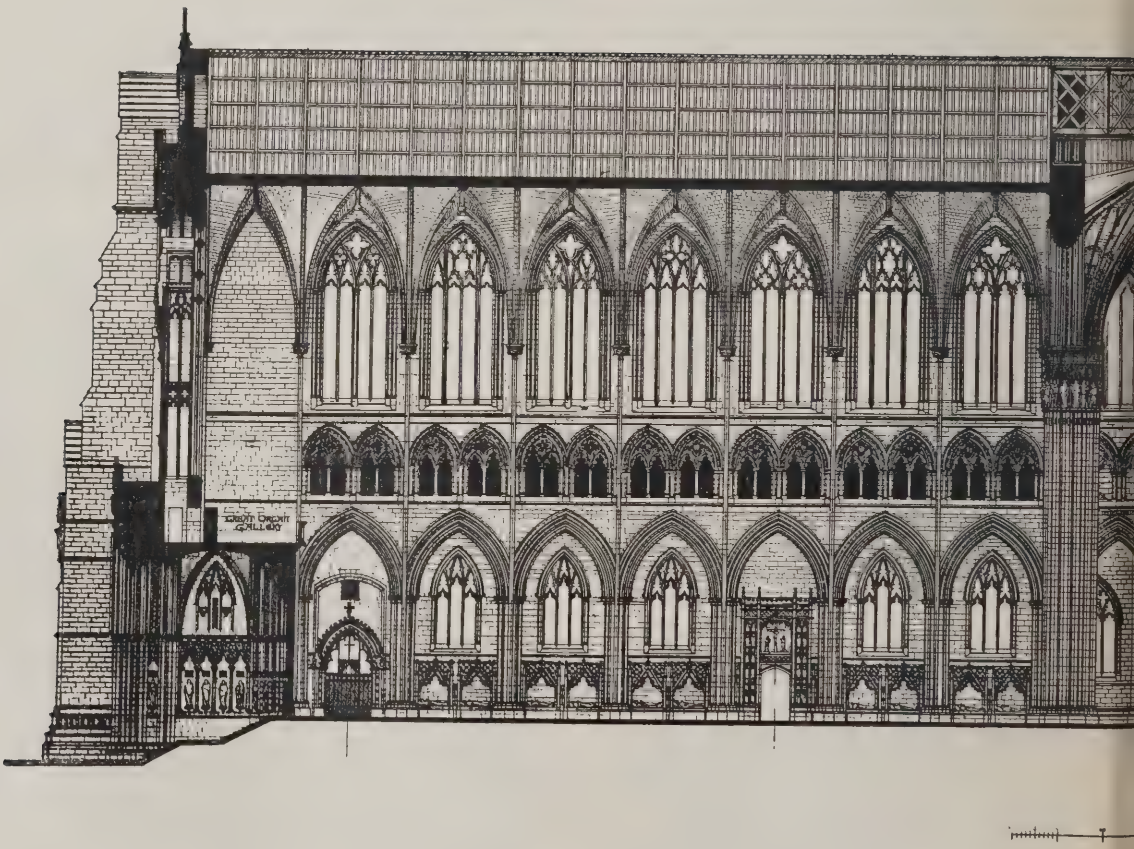
Presentation of the Royal Gold Medal.

THE last meeting of the session of the Royal Institute of British Architects was held on Monday evening at 9, Conduit Street, W., when the Royal Gold Medal was presented to Mr. Charles Follen McKim, of New York, for his executed works as an architect. Mr. Aston Webb, R.A., who presided, gave a sketch of his career.

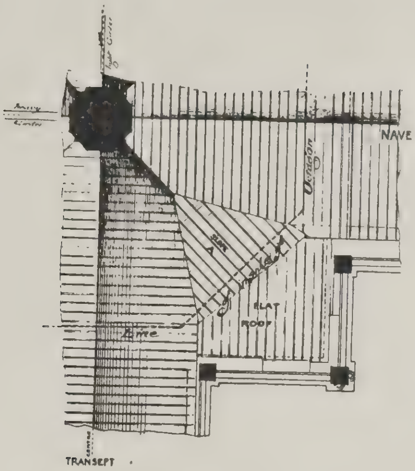
Mr. McKim was born in Chester County, Pa., sixty-five years ago. When eighteen he entered Harvard University, with the intention of becoming a mining engineer, but a year later, finding the work uncongenial, he went to the office of Mr. Russell Sturgis, architect, of New York, and in the autumn of the same year to the Atelier Daumet in Paris, where he prepared himself for the Ecole des Beaux-Arts, subsequently entering it and remaining there till the war broke out three years later. During this time he also travelled in Europe and visited England in 1869, where he was able to make profitable use of his time, "so far as cricket matches, &c., permitted": he was also elected an honorary member of the Architectural Association. Returning to New York in 1870, he entered the office of H. H. Richardson. At the age of twenty-five he commenced practice on his own account, being joined in 1877 by Mr. William Rutherford Mead and in 1879 by Mr. Stanford White—under which title of McKim, Mead & White many commissions were carried out. In 1887 they were appointed architects to the new public library for Boston, now a very famous building. In 1889 two fellowships, known as the McKim Fellowships, were established in the school of architecture at Columbia University. In 1891 Mr. McKim was appointed one of the ten American architects for the Chicago Exposition buildings. In 1894 he was appointed architect to the new capitol building for the State of Rhode Island. In 1897 the American Academy of Architecture in Rome was incorporated, and Mr. McKim elected president. In 1899 he became a member of the Academy of San Luca, and in the same year was appointed to serve on the first municipal art commission of New York. In 1901 he was appointed a member of the commission for the great improvement scheme for Columbia Park, Washington, and in the same year was elected president of the American Institute of Architects, being re-elected in 1902: in 1902 also he was appointed by President Roosevelt to restore the White House, and also as architect for the new Army War College.

Mr. Webb said Mr. McKim's style was based largely on Italian examples and showed French training; it had true artistic feeling, nobility of plan, breadth of treatment, absence of unnecessary or meretricious ornament, and suitability of purpose, and while founded on traditional lines showed just that amount of individuality required, and without which the best work must be dull and uninteresting.

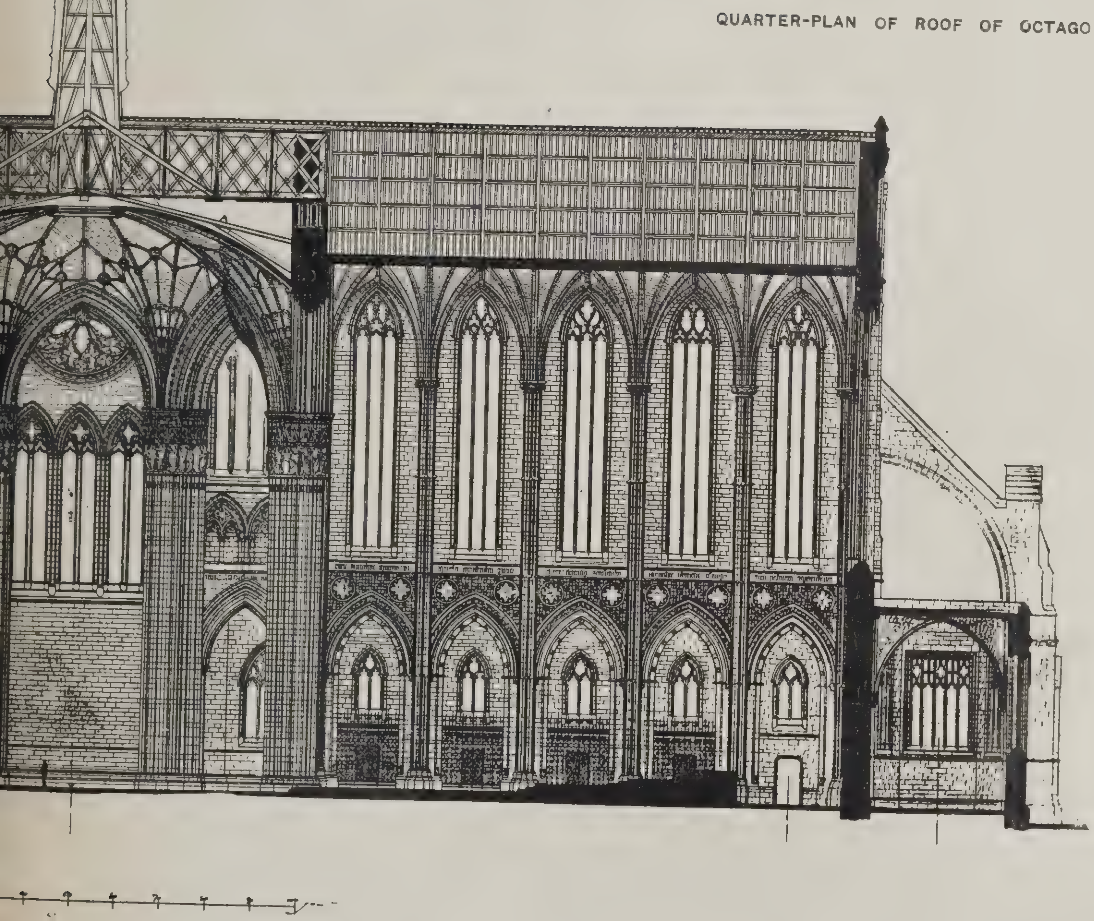
Mr. McKim replied, giving some facts about architecture in the United States, and expressing his appreciation of the honour conferred upon him. The American Ambassador (Mr. Choate), Sir Lawrence Alma Tadema and Mr. Edwin A. Abbey, R.A., also spoke.



DESIGN FOR LIVERPOOL CATHEDRAL BY



QUARTER-PLAN OF ROOF OF OCTAGON.



LM STARK   LONGITUDINAL SECTION.

Keystones.

The Académie des Beaux-Arts has awarded to M. Patrice Bonnat the Prix Deschaumes, 1,500fr., for architecture, and to MM. Déscatoire (sculptor) and Zo (painter) the Prix Tremont, 1,000fr.

The new Library at Dulwich College, erected as a war memorial to the Old Boys who died in South Africa, was opened on Saturday. Mr. Edwin T. Hall, F.R.I.B.A., was the architect.

An Operating Theatre at Kidderminster Infirmary has been erected as the town's Queen Victoria Memorial. A new ward has also been added as a memorial of the late Mr. William Adam, a local carpet manufacturer.

Durham College of Science, Newcastle.—At a recent ordinary meeting of the council Mr. W. H. Knowles, F.R.I.B.A., was appointed architect and Mr. J. P. Allen quantity surveyor in connection with the completion of the college buildings.

The Ruskin Museum, Sheffield.—The annual report states that during the year ending March 25th last the total number of visitors to this museum was 58,335, as compared with 40,580 during the previous year, the average daily attendance being 186. The special exhibit in the new room was a series of original drawings, etchings and mezzotints by Turner. Six public lectures on "The Museum and Treasures of St. George" were delivered.

Mr. Bertram Blount.—With reference to the notification in last week's issue as to Mr. Bertram Blount having removed from No. 2, Broadway, Westminster, to 76 and 78, York Street, Westminster, we are requested by Mr. R. H. Harry Stanger, son of the late Mr. W. Harry Stanger, of the firm of Messrs. Stanger & Blount, to state that he, having succeeded to his father's business, is carrying on the testing works and chemical laboratory at No. 2, Broadway, Westminster, in his own name.

St. Christopher's Church, Derby, just erected in Shaftesbury Crescent, was opened last week. It is in the thirteenth-century style, and is built of brick, with Derbyshire stone facings. The architect was Mr. Ernest Ridgway, of Long Eaton, and the contractors were Messrs. Walker & Slater, of Derby. The organ is by Messrs. Brindley & Foster, of Sheffield. The building is heated by hot-water pipes, the apparatus being supplied by Messrs Danks & Co., of Nottingham. The total cost was between £5,000 and £6,000.

The A.A. and the Westminster School of Art.—The acquisition by the Architectural Association of the premises hitherto occupied by the Westminster School of Art left this latter institution to find a new home. It has now been decided that the art school shall be carried on as nearly as possible on the old lines at the Technical Institute, Vincent Square, Westminster. The old school in Tufton Street will close on June 30th, and the new classes in Vincent Square will open in the middle of September.

A new Congregational Church and School at Little Ilford is to be erected. The tender of £4,435 submitted by Messrs. F. Gough & Co., Hendon, has been accepted. The block comprises a church to accommodate about 724 persons, and the usual vestries, &c.; also a large two-storey school, the main hall being on the upper storey and the classrooms and small hall on the ground floor. The style is Perpendicular Gothic, freely treated. The buildings are faced externally with red bricks, and the dressings are of white Costessey work. The architects are Messrs. George Baines, F.R.I.B.A., and R. Palmer Baines, 5, Clement's Inn, Strand, London, W.C.

Mr. Aston Webb, R.A.—Mr. Aston Webb, the newly-elected Royal Academician, occupies the fauteuil of Mr. Alfred Waterhouse, who recently resigned his place among "the Forty" owing to prolonged ill-health.

The Excavations at Knossos.—Mr Macmillan announces that he has been promised £1,000 towards the completion of these excavations, now being conducted in Crete by Mr. Arthur Evans. But another £2,000 is still needed.

The Worksop, Blyth and Cuckney Isolation Hospital is being warmed and ventilated by Shorland's patent Manchester stoves, Manchester grates, exhaust roof and inlet ventilators, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

The old Parish Church at Nacton, Ipswich, will soon be in the builder's hands for necessary repairs and alterations. It is proposed to put new roofs on the nave and chancel and to remove the small inconvenient chancel arch, placing in its stead a new and larger one. It is contemplated, further, to erect a small north aisle, vestry and organ-chamber, as well as a new porch, and to add a new stage to the tower.

Hull Town Hall Competition.—Mr. John Belcher, vice-president R.I.B.A., the assessor appointed to decide upon the designs submitted for the Hull Town Hall extension, has awarded the first premium of £300 to Messrs. S. B. Russell, Cooper & Davis and C. E Mallows, Gray's Inn Square, London; the second premium of £200 to Messrs. Treadwell & Martin, Waterloo Place, Pall Mall, London; and the third of £100 to Mr. A. Bramwell Thomas, Queen Anne's Gate, London. The designs are estimated to cost £100,000.

The Mosely Industrial Commission to U.S.A.—Mr. A. Mosely has made arrangements with Messrs. Cassell & Co., Ltd., the well-known publishers, for a reprint of the complete reports of this Commission, in cheap form. Copies will be sold at 6d. each nett, or post free 9d. This cheap edition is being produced by Mr. Mosely not only without profit, but at a loss, solely in order that the public may be enabled to possess themselves of the knowledge gained from the enquiries made in the United States. The Board of Trade has ordered 3,000 copies for free distribution.

The Civil Service Commissioners have announced that an open competitive examination for four appointments as assistant civil engineer in the Department of the Director of Works of the Admiralty will be held in July. Forms of application for admission to the examination, together with a copy of the regulations, may be obtained on written request addressed to the Secretary, Civil Service Commission, Burlington Gardens, London, W. The forms of application must be returned so as to reach the Civil Service Commission not later than July 2nd. The salary commences at £200 a year, and assistant civil engineers are eligible for promotion to higher grades.

The Leeds and Yorkshire Architectural Society held its first summer excursion on June 13th, when the members visited the new St. Anne's R.C. Cathedral now in course of erection in Cookridge Street, Leeds. The visitors were met and conducted over the works by the architect, Mr. J. H. Eastwood, A.R.I.B.A., to whom a vote of thanks was accorded on the motion of Mr. Butler Wilson, F.R.I.B.A., president of the Society. The members then inspected additions to Messrs. Spark & Son's printing works, where a new system of fireproof flooring, known as the "Fram," has been introduced into Leeds by the architects, Messrs. Butler Wilson & Oglesby. The party afterwards journeyed to Seacroft, where a new infectious diseases hospital is in progress from the designs of Mr. Edwin T. Hall, F.R.I.B.A.

Builders' Notes.

A Bridge Contract.—The contract for the Rhodesia railway bridge over the Zambesi, which crosses half a mile below the Victoria Falls, has been secured by the Cleveland Bridge Co., Darlington. The bridge, 650ft. long, crosses a deep gorge 360ft. above the water level. The main span is a 500ft. steel arch. There will be a double line of rails.

Employment in the Building Trades, the Board of Trade Labour Department states, remains about the same as a month ago, and is not quite so good as a year ago. The percentage of unemployed trade-union members among carpenters and joiners was 2·6 at the end of May, compared with 2·8 at the end of April and 2·5 in May of last year. The percentage for plumbers was 6·4 at the end of May, as compared with 7·1 in April and 5·9 in May, 1902.

The International Fire Prevention Congress is to be opened in state at 11.45 a.m. on Monday, July 6th, by the Right Hon. the Lord Mayor of London. The Lord Mayor will be accompanied by the Burgomaster of Brussels. The first Congress conversazione will take place on the Monday evening, July 6th. The general and sectional discussions will take place on the Tuesday, Wednesday and Thursday forenoons, July 7th, 8th and 9th. The testing operations and inspections are fixed for the afternoons of these days, and there will be entertainments for the visitors in the evening. The Congress banquet has been fixed for Wednesday, July 8th.

Sir John Mowlem Burt and Mr. George Burt, of Grosvenor Wharf, Westminster, announce that for family reasons they have decided to convert the business of John Mowlem & Co. into a limited liability company, all the shares being held privately, and the change taking effect as and from January 1st, 1903. The management will still remain in the hands of Sir John Mowlem Burt and Mr. George Burt, who will be governing directors. They have associated with themselves as a director Mr. Edwin John Burt, son of Sir John, who has been superintending works by the firm for some years; and as a director and secretary of the company, Mr. James Marsden, who for a long period has been in the confidence of the firm, and has the direction of its official department. These four will constitute the first board of directors.

The Engineering Conference.—In opening the proceedings of the three days' engineering conference held at Westminster last week, Mr. J. C. Hawkshaw, president of the Institution of Civil Engineers, said that during the last two years two great works had been completed—the Nile dams for irrigation purposes and the conveying of water 300 miles in steel pipes to Coolgardie. It was impossible to over-rate the importance of the Engineering Standards Committee, consisting of 296 of the most eminent men in the profession. The work of the various committees was at an advanced stage, and those on building and general bridge construction and tramway rails had been completed. When they had standardized the sections most in use by engineers, and issued standard specifications and standard tests for materials, a great saving to the country would be effected. Then their Institution had been paying great attention to the subject of the training of young engineers, and a committee, under the able guidance of such men as Sir John Wolfe Barry, Sir William White, Sir Guilford Molesworth, Dr. Kennedy, Professor Unwin, Mr. Siemens and others, had done much to increase the standard of efficiency.

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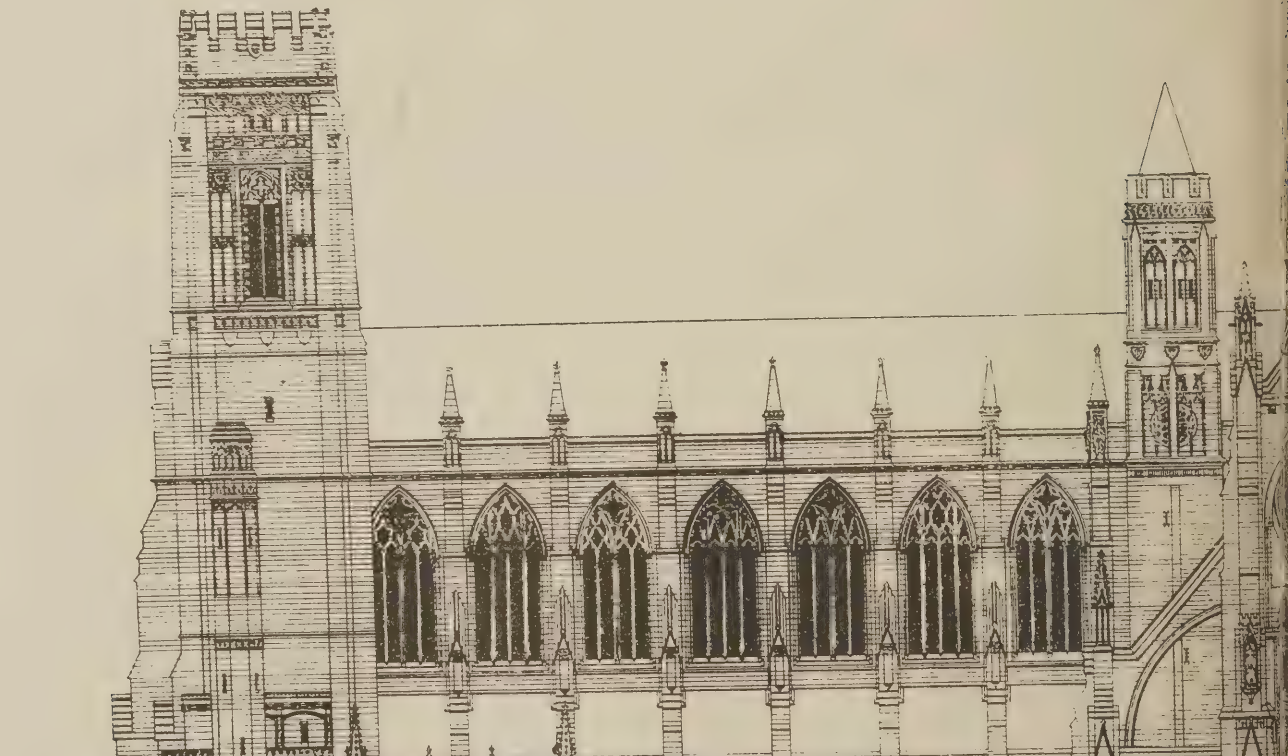
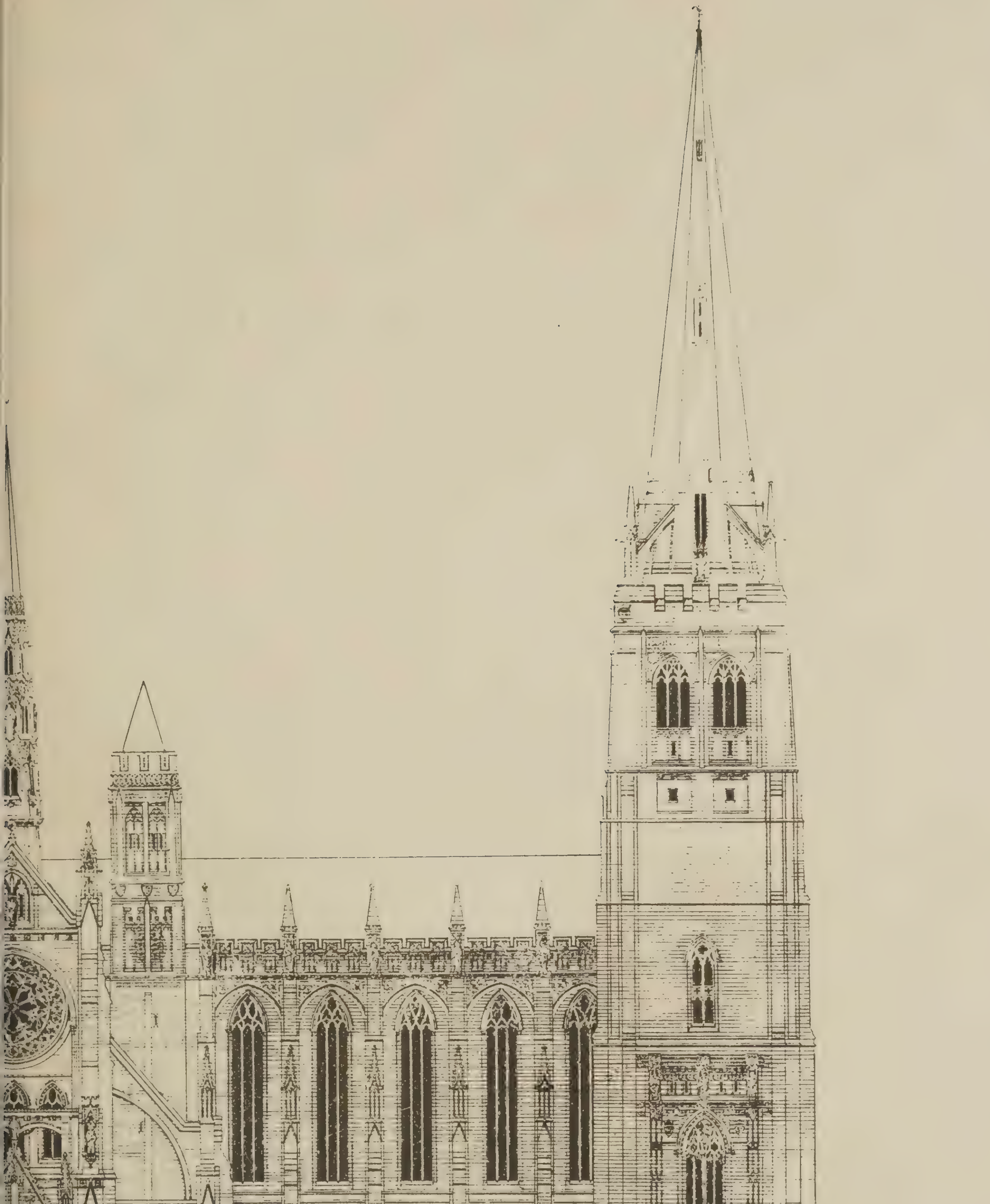
Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, June 24th, 1903



DESIGN FOR LIVERPOOL CA



AL. BY MALCOLM STARK.

" PHOTO-LITHO " R. J. EVERETT & SONS, 56 LUDGATE HILL, E.C.

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Supplement to
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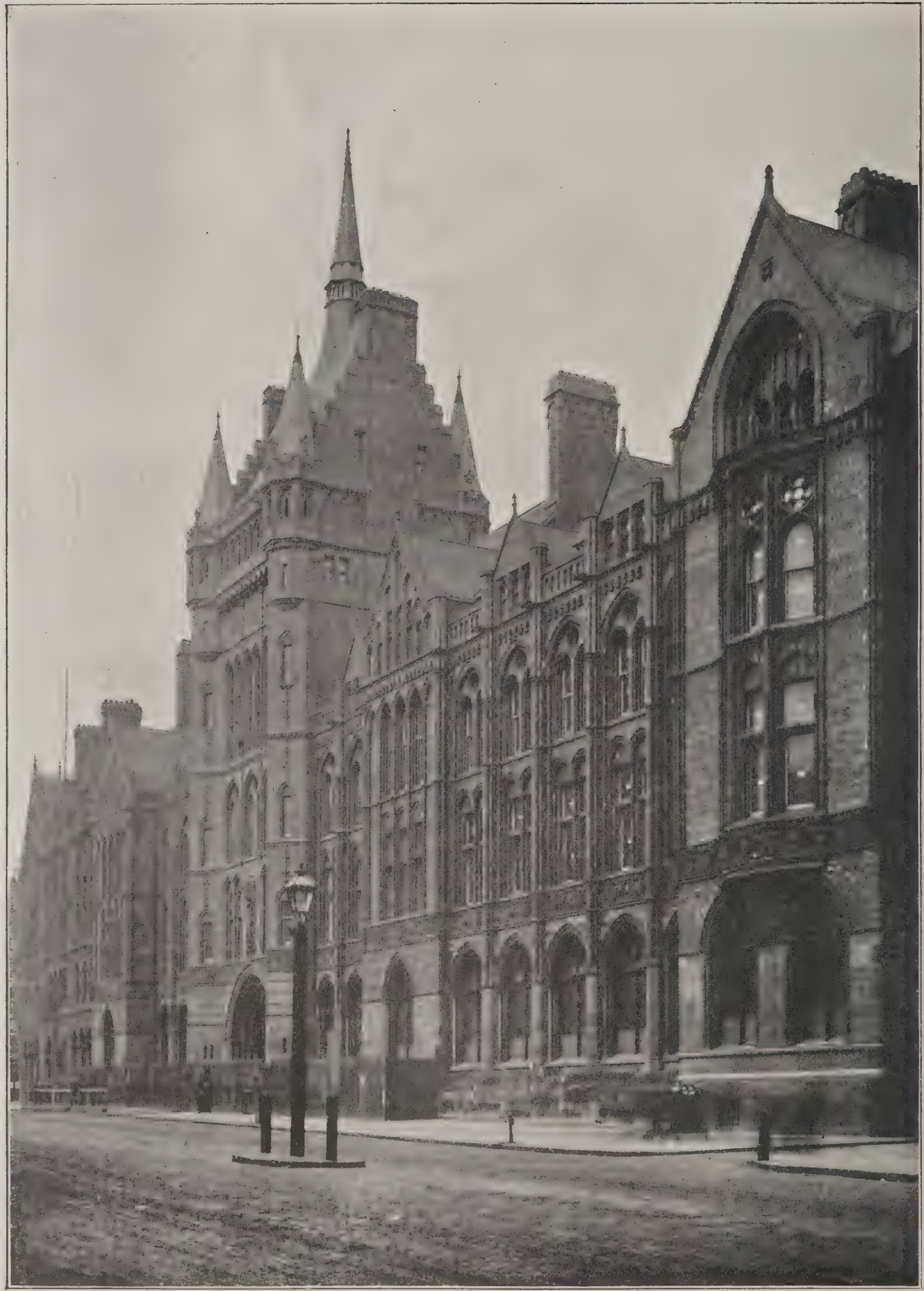
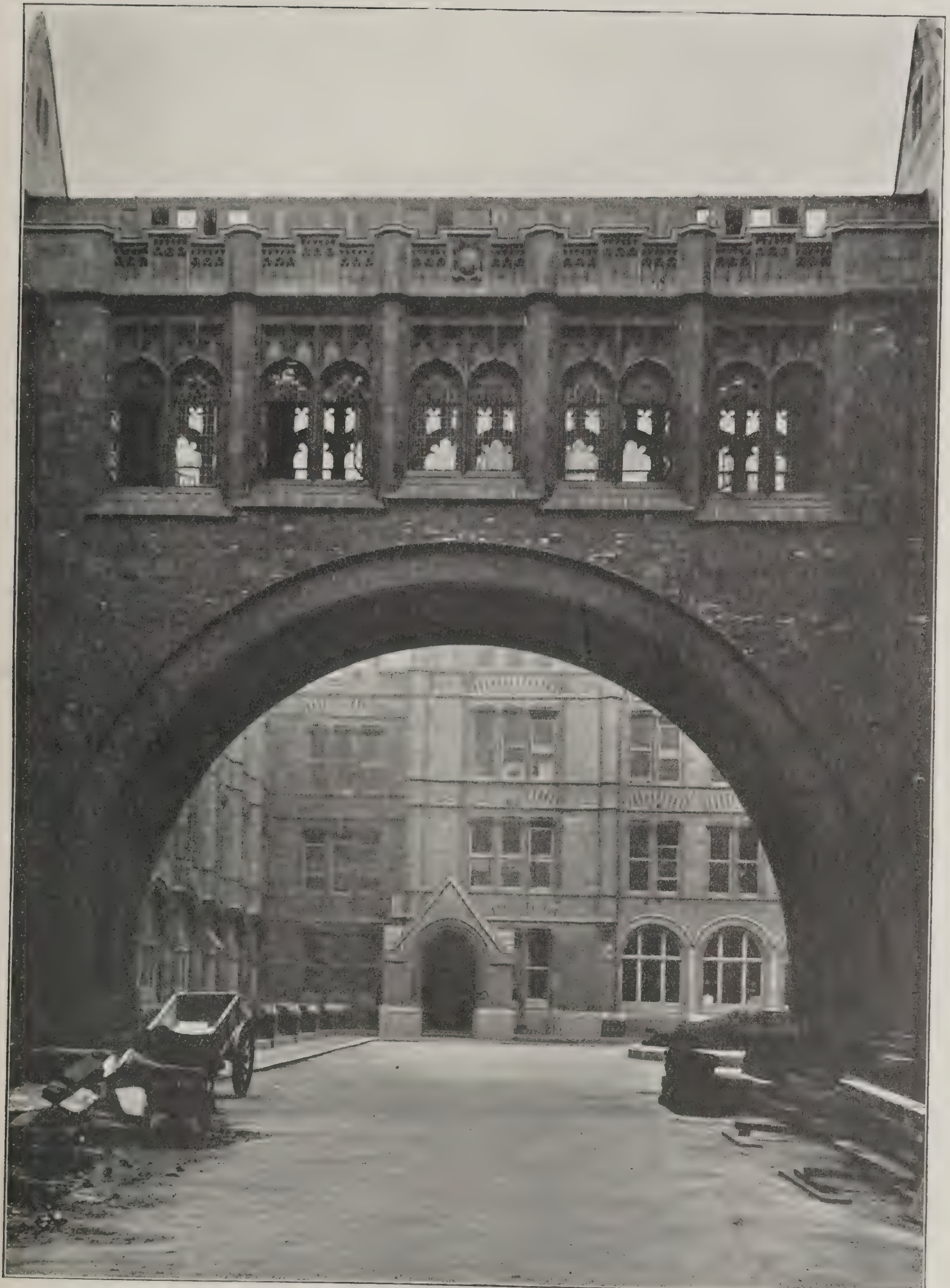


HOLBORN FRONT.

The Prudential Assurance Company's New Building, Holborn Bars, L



COVERED WAY BEYOND MAIN ENTRANCE.

LFRED WATERHOUSE, R.A., ARCHITECT (A. WATERHOUSE AND SON).

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Bricks and Mortar.

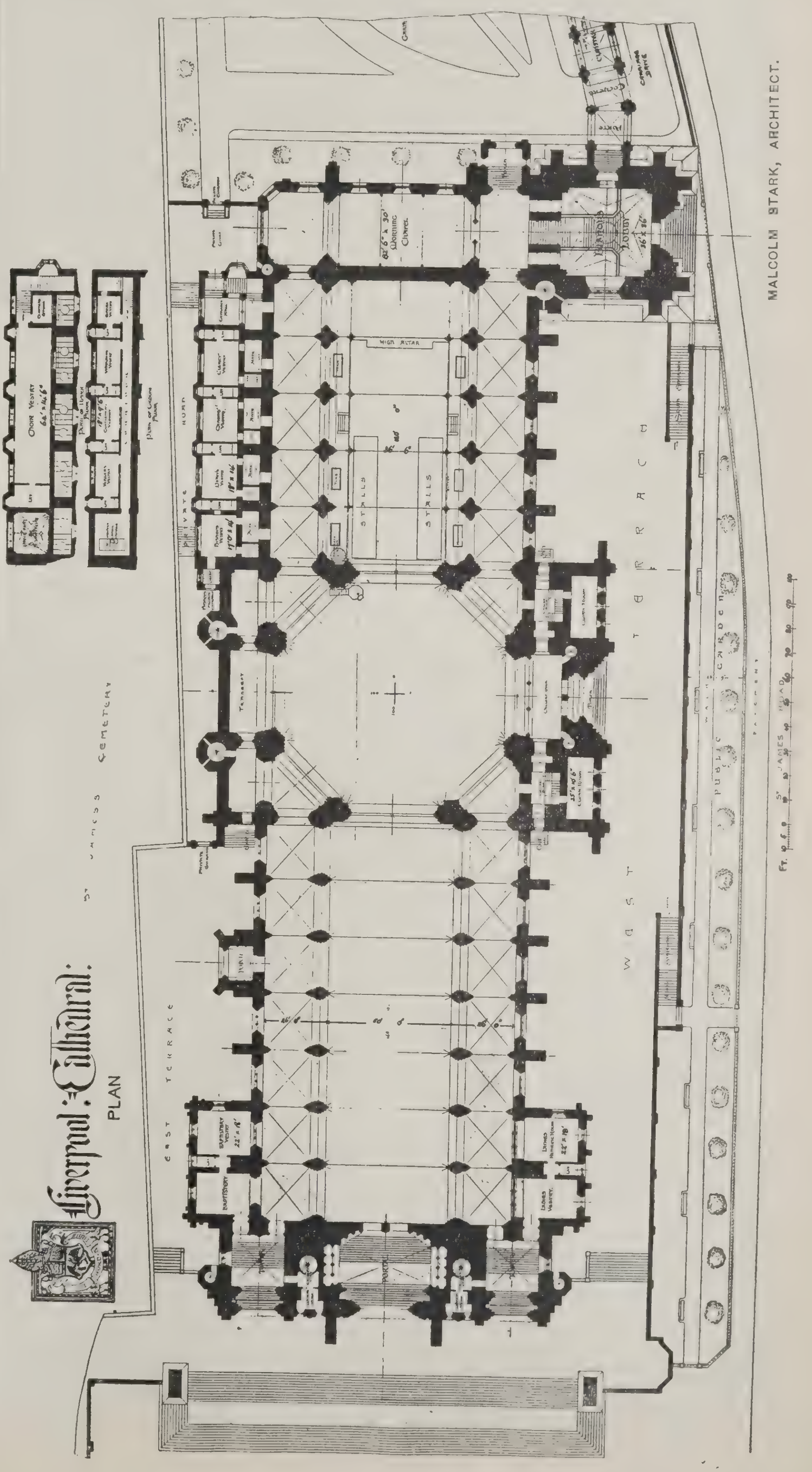
Aphorism for the Week.

It is only in the realization of ideal aims, by means of invention and imagination, that architecture vindicates its claim to rank among the arts.—Basil Champneys.

Our Plates. The Prudential Assurance Company's new buildings are the work of the firm of Messrs. A. Waterhouse & Son, the external design being wholly attributable to Mr. Alfred Waterhouse, R.A. Mr. Waterhouse, however, retired from practice in August, 1901, owing to ill health, and since then the conduct of the whole, together with the design of portions of the internal finishings, has been left entirely in the hands of Mr. Paul Waterhouse, who, on his father's retirement, was appointed by the Prudential Assurance Company to act as their architect.

Richborough Castle. Mr. Charles F. Routledge writes: "There seems to be an increasing desire among antiquaries that further excavations should take place at Richborough and another attempt be made to solve the mysterious problem as to the use of the 'mass of concrete' (145ft. by 104ft., and more than 22ft. deep) which occupies the position usually assigned to the prætorium. The opinion generally received is that this mass was at first intended as a foundation for a gigantic stone pharos, but that (in consequence, perhaps, of some Saxon inroads) a temporary wooden pharos was substituted, of which the cross, now existing on the platform, was the internal buttress or support. But (as Mr. Goddard has lately pointed out) the main sea was then at least a mile from the position of the supposed pharos, and Richborough is called a 'statio tranquilla.' What, then, would have been the use of a large lighthouse there, especially as a small Roman tower (the remains of which have been actually found) at Worth would have better served in that capacity? Why should a lighthouse, needed for an inner bay, have required such colossal foundations? Under any circumstances, it would have been unnecessary and wasteful to make the substructure a solid cube—and we may conclude that in all probability the mass of concrete is hollow. If so, it might have been used as a granary or arsenal, or (as Mr. Goddard suggests) as a great reservoir for the storage of fresh water to be supplied to the shipping below and for the service of the garrison above. Nor can we altogether dismiss as incredible the idea that it may have served as an ærarium, or treasure-house. This is, as I have said, an interesting archæological problem that must eventually be solved; but there are many other portions of the Richborough camp in which excavations are desirable; and I am sure that the trustees would give their consent to such excavations being undertaken under competent superintendence, provided that a sufficient sum of money is forthcoming."

A Casket for Mr. Chamberlain. The casket, designed by Mr. Harry Wilson, the well-known architect, to be presented by the members of the Constitutional Club to Mr. Chamberlain on June 26th, is now on view in the club. The main idea of the design is that of a casket, box or ark borne on the waters of the sea. The pedestal is divided into two stages. On the upper stage are four enamelled ships of different types and periods, typifying the sea power of Britain, while on the angle piers in the lower stage are panels of tribute-bearing kings and queens, emblematic of the land power, past and present, of this kingdom. In the central niche of the front of the casket is a figure of Britannia; a male figure symbolizing Commerce stands on a ship resting in her lap. In the opposite niche is a figure of Peace, also seated, with a garland of olives round her head; she bears a globe on which is a gold map of Africa; in the centre of this is a sleeping figure of Love—the whole symbolizing the restoration of peace. In the end niche are figures of India and Canada. The opposite niche contains figures of Australia and New Zealand. The top of the pedestal is formed by a network enclosing emblems of the four kingdoms, and bears the dedicatory inscription in gold and blue in the centre. On the lid of the casket proper are four panels in translucent enamel. That over the central niche symbolizes Empire, shown as Britannia seated on her island surrounded by her Colonies, imaged as children. Each colony leads a ship by a golden cord. Over the group of Australia is a panel symbolizing the Federation of Australia. Britannia spreads her robe round the infant states of the New Commonwealth. One of the cherubs bears a shield with "Advance Australia," the device of the colony.



Liverpool Cathedral: PLAN

MALCOLM STARK, ARCHITECT.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Patent Sashes.

HULL.—F. S. writes: "Who are the makers of Moline's patent wrought-iron sashes?"

The General Iron Foundry Co., Ltd., 43, Upper Thames Street, London, E.C., or they may be obtained from Messrs. Young & Marten, Caledonian Works, Stratford, E.

Covering Hot-Water Cylinder and Pipes.

RADLETT.—SUBSCRIBER writes: "Does coating a hot-water cylinder and pipes with a non-conducting medium result in an appreciable saving in fuel, and if so, what is the best material to use for the purpose?"

Whether covering the cylinder and pipes with a non-conducting substance would result in an appreciable saving in fuel would depend on many circumstances. Is the water heated in a boiler behind the fire of a cooking range? In this case the fire is usually regulated by other considerations than the water to be heated. What is the length of pipe between boiler and cylinder, and between cylinder and draw-off taps, and to what extent are cylinder and pipes exposed? Speaking generally, there is a great benefit derived in so covering the cylinder and pipes, and doing so will sometimes make an apparatus efficient that was previously a failure. Hair-felt is one of the best materials to use. It is wrapped around the pipes—having previously been cut into strips of convenient width—and around the cylinder, being held in position with string or wire. G. A. A.

Corrugated Iron Buildings.

HARROGATE.—J. T. writes: "I wish to build a bungalow near a brickyard which I hold under a five years' lease. I proposed to build it of corrugated iron, but the urban district council refused to pass the plans under the by-law (Model By-laws) that the material must be incombustible and laid in horizontal courses. I cannot afford to build in brick on so short a lease; besides, the same council have just built a hospital and caretaker's house of the same material. Is there any decision to explain this, and what would be the process in case they decided to prosecute?"

It will be seen by reference to clause 2 of the Model By-laws that a building erected as a temporary hospital for infectious diseases is exempt from the operation of the by-laws. Similarly, Government buildings are not subject to the control of local authorities and are exempt from their by-laws. In some districts the local authorities permit the erection of corrugated iron buildings as dwelling-houses (provided the site is suitable and adequate constructional precautions against fire, &c., are taken); but such a course is discretionary with the local authority, unless the by-laws make provision for the erection of iron buildings of this description. In the case of buildings erected in contravention of the by-laws, the local sanitary authority is required to serve a notice on the building owner calling upon him to show sufficient cause why such work should not be removed, altered or pulled down; and should he fail to show sufficient cause, the sanitary authority is empowered to remove, alter or pull down such work. It then rests with the building owner to take such action as he considers necessary. We think the best course would be to see the surveyor to the urban district council and ascertain from him under what restrictions or conditions the local authority would permit the erection of an iron building for the purpose you propose. If the period of your lease is so short and of such a temporary character that it is not worth while to build with a due regard to health, safety and comfort, then it would be better to abandon the project altogether. T. E. C.

Old Basing House.

BASINGSTOKE.—J. A. S. writes: "Kindly give some particulars of Old Basing House. Are there any records of its original structure?"

The only part of Old Basing House which is now standing is the gateway, built in brickwork, of sixteenth-century date. The house in Cromwell's time, after having stood the longest siege of any fortified place in England—namely, two years—was razed to the ground by Cromwell in person, with his Ironsides. Until quite recently the site was overgrown with grass, when excavations revealed cellars, passages, archways and ovens dating back to between the sixteenth and seventeenth centuries. The building was probably erected on the site of an ancient Norman castle, which was enclosed by mighty British earthworks, second only perhaps to those at Castle Rising, in Norfolk. Probably coeval with Basing House is Basing Church, a brick building in the Perpendicular style. There is no drawing extant of the house, neither are any records known except historical ones of the period. M.

Superheated and Saturated Steam.

WALES.—SANITARIAN writes: "(1) What is superheated steam, and what is saturated steam? (2) What diseases are persons engaged in offensive trades, such as fellmongers, &c., particularly liable to?"

(1) Saturated steam is the term applied to all steam formed in a closed vessel and arising directly from the boiling water with which it is in contact, so that the steam is then in such a condition that it would yield some portion of water on the slighest reduction of temperature or increase of pressure. For instance, the boiling point of water under ordinary atmospheric pressure at mean sea-level is 212 degs. Fahr. (100 degs. C.), but if subject to an additional pressure of 10lbs. per sq. in. the boiling point of water is not reached until a temperature of 239 degs. Fahr. is obtained, whilst at 20lbs. pressure it is 259 degs. Fahr. In the cases mentioned, the temperatures of saturated steam generated under these different conditions are therefore 212 degs., 239 degs. and 259 degs. Fahr. respectively. It will thus be seen that the term saturated steam does not refer to water vapour generated at any one particular temperature or pressure, for steam at any pressure is saturated when it is at the temperature of the boiling point of water for that pressure. Steam which is generated from boiling water at atmospheric pressure is sometimes known as "low-pressure" steam, whilst steam obtained under pressure is known as "high-pressure" steam, but in each case the steam produced is saturated steam, although the respective temperatures vary considerably according to the pressure at which it has been produced. Superheated steam consists of saturated steam which has been raised to a higher temperature than that of the corresponding boiling point of water from which it was originally generated. This result may be obtained by passing the saturated steam through a stove or chamber which is maintained at a higher temperature than the steam as given off from the boiling water. For all practical purposes, superheated steam is a gas, whilst saturated steam is a vapour. In the case of disinfectors, superheated steam is generally obtained by surrounding the saturated steam chamber with a jacket or casing containing steam at a higher temperature than that within the saturated steam chamber. For ordinary disinfecting purposes, however, it is now generally admitted that superheated steam has less penetrating power than saturated steam under similar conditions. Saturated steam generated at about 10lbs. pressure is usually found to give satisfactory results. If required, it is possible to obtain both saturated and superheated steam with almost any well known form of disinfecting apparatus, such as the "Washington Lyon," manufactured by Messrs. Manlove, Alliott & Co., Ltd, Nottingham; the "Equifex" (Geneste & Herscher's patent), manufactured by Messrs. Defries & Sons, 147, Houndsditch, London, E.C., and other similar types. (2) Fellmongers are very liable to skin and parasitic diseases. All persons following occupations of this description should exercise the greatest personal cleanliness and care in their work. T. E. C.

Advanced Building Construction.

CAMBERLEY.—L. M. G. writes: "Your solution to question 29 of the Advanced Stage in Building Construction is not quite clear. I should be extremely obliged if you would explain more fully, and also state where my answer is at fault. The following is the answer I gave: Length of roof-slope = 5ft. The gauge of the sheets is 6in. ∴ 10 sheets will be required vertically. Length of sheet = 2 gauge + lap = 6in. + 6in. + 3in. = 15in. ∴ total length of copper up the roof-slope = 10 × 15in. = 150in. The circumference half-way up the roof-slope = 4ft. × $3\frac{1}{7}$ = 151in.

Area of copper on roof = 150in. × 151in. = 22,650 sq. in. -	22650
Extra on conical cap = (4in. × $3\frac{1}{7}$) × 5in. = 65 sq. in. -	65
Extra on eaves-course = (8ft. × $3\frac{1}{7}$) × 9in. = 2,718 sq. in. -	2718

144{ 12)25433
12)2119·5
176·7

Weight = $176\frac{3}{4} \times 3$ = 530lbs.

Answer 530lbs. approximately."

I begin by admitting an arithmetical error in the area of the average ring of lap; I took it from a diagram, and by mistake used the radius as if it were the diameter. I shall, however, try to be perfectly explicit now. The slope is 5ft.; there are consequently, before the cap is put on, 10 bands of margin from eave to apex; there are therefore 9 rings of lap; at each ring of lap there are three thicknesses of copper; the fifth ring is an average ring; the distance of its centre line from the apex is 2ft. $4\frac{1}{2}$in. = 2·375ft.; its diameter is $\frac{2 \times 2·375 \times 4}{5} = 3·8$ft.; its girth is 3·8 × 3·1416 = 11·94; its area $\frac{11·94}{4} = 2·985$, say 3; the area of the 9 rings is therefore 27 sq. ft. The area of the curved surface of a cone is $\frac{gs}{2}$, where g is the girth at the base and s the distance from the apex to the circumference of the base; in this case $\frac{5 \times 8\pi}{2} = 20\pi$. There are two thicknesses of copper over this area and the additional thickness at the rings of lap.

40π for two thicknesses of copper - - -	125·664
9 average rings, extra thickness - -	27·000
Cap - - - -	·436
	153·100
	3
	459·300lbs.

If you sketch it out you will find that the length of sheet from circumference to apex is 9in. + 8 × 15in. + 12in. + 6in. = 147in. = 12·25ft.; and this multiplied by the girth at base and divided by 2 will give 153·9 sq. ft. (an approximation). Another, but rougher, approximation is to take $2\frac{1}{2}$ times the area: $2\frac{1}{2} \times 62{\cdot}8 = 157$. You are seriously wrong when you add 2,718 sq. in. for extra on eaves-course; there are only two thicknesses under the margin at the eave. Owing to imperfect checking there are errors: In question 23, $d^3 = \frac{b\Delta}{kw\mathrm{L}^4}$ should be $d^3 = \frac{kw\mathrm{L}^4}{b\Delta} = 2{\cdot}025 : p = 1406$. In question 25, instead of 131·8 read 153·8; and this makes bricks in a yard 304, sand 6 bushels, and cement 2 bushels. Note: It may be worth while to point out that if the centre of gravity of the section lines of plates can be accurately found, the area of the plates may be determined by multiplying 12·25ft. by the path of the centre of gravity —its circle round the axis of the cone. The small error in the above approximation arises by its having been assumed that the centre of gravity is at the centre point of the slope. It is not; it is a little nearer to the apex. It is an exceedingly useful thing for practical men to make up Guldin's (or Guldinus') theorems for questions of mensuration of curved areas and solids, and for questions of centres of gravity of lines curved in one plane.

OUR CONTRIBUTOR.

Removing Varnish from Oak Doors.

NORTHAMPTON. — WEEKLY SUBSCRIBER writes: "Which is the best way to remove old varnish from natural oak doors so as to retain the original colour and grain for re-varnishing?"

Any element or agent which is sufficiently caustic to remove (that is to destroy) the varnish is also strong enough to damage in some degree the wood itself, either in colour or grain, or both. "Stripso," a chemical agent, the composition of which is not known to the writer, is a preparation which will effectually remove the varnish and is guaranteed not to injure the wood, but it will certainly raise the grain to some extent. Glasspaper will, however, overcome this difficulty. "Stripso" is manufactured by Messrs. C. Chancellor & Co., of 13, Clerkenwell Road, E.C. H. E.

Buildings to Measure around Monmouth and Ripley.

BIRMINGHAM.—F. E. D. writes: Kindly mention a few buildings around Monmouth suitable to measure."

Though my personal recollection is that the district is architecturally rich, I can find little definite information about it. Ross Church I once sketched, thinking it to be good Decorated work, but have lost the sketch, and, after nearly twenty years, forget the detail. Mitcheldean Church, one of the few with a double nave in the country, has a good roof, and I fancy good windows also. Tintern Abbey and Raglan Castle are both within reach, but it is doubtful whether permission to measure at either place is obtainable. At any rate direct enquiry should be made in advance, enclosing a stamped envelope for reply. G. A. T. M.

HANDSWORTH.—D. E. F. writes: "I should be glad to have some particulars of any building near Ripley, in Derbyshire, suitable to measure."

At Crich, about 8 miles from Ripley, is a church with good Decorated windows. At Pentrich, about 3 to 4 miles away, is a church with some Norman and much Perpendicular work. The five-light east window of this period is particularly worthy of study, being of unique design. At Pinxton, about 8 miles away, is a church, largely restored, with one two-light Decorated window and one debased square-headed window of three lights. At Duffield (9 miles, as the crow flies) is a church containing a considerable amount of interesting Norman work and a good two-light window with pierced trefoil head of the Transition period, Early English to Decorated; besides which there is also some Decorated and a considerable amount of Perpendicular work. M.

Dry Rot

GLASGOW.—A. B. S. writes: "In what issues of your journal did the articles on dry rot appear?"

"Some Notes on Dry Rot" by a specialist were published in our issues for August 22nd, September 5th and September 19th, 1900.

Patent Copper Boilers.

ISLE OF MAN.—SUBSCRIBER writes: "I have for some years specified Marshall's seamless copper boilers, and have found them very satisfactory. But in two or three cases recently the contractors and plumbers have informed me that this particular boiler cannot now be obtained, and that the patentee has ceased to make them. Is this so?"

I know nothing of the boilers referred to or the discontinuance of their manufacture. You should write direct to the patentee, whose address you ought to be able to obtain from some of the contractors who have supplied the boilers to your specification.

HENRY ADAMS.

Pressure in Silo.

NORFOLK. — DOUBTFUL writes: "I have been informed that the pressure on the bottom (constructed at any angle) of a silo for grain is only a small portion of the weight of the contents. Is this correct? Also, what formula is used to find the pressure on the sides?"

It would be impossible without experiment to say what pressure is produced at the bottom of a silo full of grain. If it were any use to get at it, one might suggest that a possible answer would be that the area under consideration, if flat, whether a portion or the whole of the bottom, would be under a pressure due to the weight of a cone of the grain having a base equal to the given area and sides inclined at 60 degs. The pressure on the sides would probably be that due to a wedge of grain having an angle of 30 degs. at the bottom, calculated in the same way as a retaining wall. If the bottom were tapered like a funnel, the pressure on the complete ring would have to be taken supposing it to be surmounted by a cone of the grain as above. HENRY ADAMS.

"Drain" or "Sewer."

HARPENDEN.—A. H. S. writes: "When is a drain a drain and when a sewer? A block of four cottages is to be erected. One cesspool is considered sufficient, and it is proposed to have a common drain as shown on plan (not reproduced). The local authority consider that this would constitute a sewer repairable by them. But as it is never intended to divide up the ground at the back of the houses with fences, and there will be a common path at the back, I consider that the drain can be regarded as wholly within one curtailage, and therefore is a private drain. (1) Are the local authority right, or am I? (2) If the ground at the back were one common yard, would the drain be a private drain? The local authority admit that it would."

We have repeatedly answered enquiries as to what is a drain and what is a sewer—see the long reply on p. 276 of our issue for last week, which covers the ground of this enquiry. See also the report of the deputation which waited on Mr. Long last Friday, given on p. 290 of this issue.

A Norman Tower.—It is proposed to restore the tower and belfry of the fine Norman parish church at Bledlow, in Buckinghamshire, at a cost of about £800.

Views and Reviews.

Books on Architecture and Building at the Patent Office.

About three years ago the Patent Office authorities began to issue their series of sixpenny handbooks containing lists of the multitudinous books in the library. The handbook now before us is the twelfth of the series, and includes all the works on architecture and building construction. With so vast a number of subjects concerned, it is not to be expected that the Patent Office library, extensive as it is, can be as comprehensive in all its sections as the separate collections of the societies and associations: consequently its books on architecture and building are not comparable with those in the Royal Institute library; but they are nevertheless a goodly collection, and have the distinct advantage that they may be pulled down from the shelves by the reader without filling up any forms or making any request whatsoever: for the Patent Office library is open to anyone, and the signing of the book in the entrance hall is the only requirement.

This new handbook comprises 1,344 works (71 serials, 1,273 text-books, &c.), representing about 3,173 volumes. These are arranged under subject headings with the date of each book (so that the latest can be selected at once), and a summary of the headings given in class order. The book will be of great service to those who are able to use the Patent Office library, and will also be found handy for reference by those who do not reside in London.

Subject List of Works on Architecture and Building Construction in the Library of the Patent Office (25, Southampton Buildings, Chancery Lane, W.C.). Price 6d., postage ½d.

Obituary.

Mr. William Gibb, of Craigton, Fintray, Stirlingshire, died last week. Deceased was a son of the late Mr. John Gibb, who was the first to open up and develop the Rubislaw Quarries, Aberdeen. Mr. William Gibb always manifested a great interest in the quarries, and when a limited liability company was formed to carry them on he was appointed a director, a position which he occupied till the end.

Mr. Edward Woods, who was perhaps the oldest railway engineer in this country, died last Sunday week. Born in 1814, Mr. Woods at the age of twenty-one entered the service of the Liverpool and Manchester Railway, then recently opened for traffic, and was soon afterwards appointed its chief engineer. He was chosen president of the Institution of Civil Engineers in 1886, having then been a member for forty years. Mr. Woods also served as president of the Smeatonian Society of Engineers and of the mechanical section of the British Association.

Mr. George Watson, architect, of the burgh surveyor's department, Aberdeen, died last Saturday week at the age of twenty-seven years. Mr. Watson served his apprenticeship with Messrs. Matthews & Mackenzie, architects, Aberdeen, and was afterwards for a short time in the employment of the Aberdeen School Board. He subsequently went to South Africa, where he remained for three years, but at the outbreak of the war, owing to the unsettled condition of the country, he returned to Aberdeen, and had since been in the employment of the burgh surveyor. For a considerable time he taught a class of building construction at Gordon's College. He carried out a number of important works for the Corporation, including the present extension of the fish market and the car sheds at Constitution Street, Queen's Cross and Mannofield.

Law Cases.

Overtime in the Building Trade.—Mr. G. Chamberlain, builder, of 14 and 15, Hall Street, City Road, E.C., was recently summoned at the Worship Street Police Court by a workman named Long for wages, £1 5s. 6d. The plaintiff entered the employment of the defendant on May 20th, no questions being asked whether workmen were trade-unionists or not. Plaintiff commenced work at 2 p.m. and worked till 7 p.m. The next day he worked from 8.30 a.m. till 7 p.m. On the 22nd he commenced at 6.30 a.m., and during the afternoon asked defendant's son if time and a quarter was paid for overtime. Upon receiving a reply in the negative he stated that he could not work after 5 o'clock, and accordingly left at that hour. On Saturday he worked from 6.30 till 12—thus making 28½ hours altogether. When applying at the office for his wages he demanded an extra five-eighths hour, 7d., for the 2½ hours he claimed to be overtime. This the defendant refused, but offered to pay for the 28½ hours at 10½d. per hour, £1 4s. 11d. Defendant declined this, and after a call from the Society's delegate the police-court proceedings were taken. The magistrate held that the rules of the union were not binding on the defendant, and that there was nothing to prove it was a custom of the trade within the meaning of the term as intended by law. He could therefore only give judgment for the 28½ hours actually worked, £1 4s. 11d., no costs being allowed.

PRIVATE DRAINS AND PUBLIC SEWERS.

Deputation to Mr. Long.

LAST week Mr. Long received the representatives of twenty-one metropolitan borough councils, who desired him to get rid of the decision of the Court of Appeal, which had decided that a drain pipe receiving water from two houses became a sewer within the meaning of the Metropolitan Management Act of 1855, by which the burden of reform was taken from the private owner and fell upon the local authority, resulting in an average burden of a ½d. in the £ on the ratepayers of London. Sir A. Rollit, M.P., said the precise point was that where two or more houses were served by way of combination drainage, and where no record could be found in the shape of an express authority by the local sanitary authority, the cost both of maintenance and repair was held to fall upon the authority. They asked the Government to take up this matter. After the Mayor of Battersea, Alderman Cuffin and Mr. H. J. Smith (town clerk of Lambeth) had spoken, Mr. Long, in reply, said there was no dispute as to the facts and, he might almost say, the ridiculous condition of things which had arisen. He was invited to ask Parliament to settle in future—when was a drain not a drain, or when it became a sewer? It was not an easy question to carry through Parliament. But there did not seem any reason for confusion in fact or in law between two things which were so essentially different as a sewer and a private drain. As had been pointed out, this question did not affect merely the local authority and the private owner, but it might seriously interfere with public improvements. Certainly in regard to a sewer which a local authority had to maintain they ought to be masters both as to the situation of the sewer, its construction, and everything connected with it before they should be called upon to be responsible for it, and much less to be responsible for its maintenance. He recognized the existence of a very serious difficulty, and that it could be remedied only by the intervention of the Government. He fully accepted the situation, and asked them to be content with his assurance that he would give to the solution of the matter his most careful and earnest consideration.

THE GRANITE TRADE AND PREFERENTIAL TARIFFS.

A CORRESPONDENT of the "Aberdeen Free Press" points out that amongst business and commercial men throughout the north of Scotland there is perhaps no class to which Mr. Chamberlain's great fiscal proposals will appeal more closely than to those connected with the Aberdeenshire granite industry. Scarcely ten years ago one of the most important branches of that trade was its large export connection with America. At that time, said a prominent granite merchant the other day, it is not too much to say that eleven-twelfths of all the granite work cut in Aberdeen was exported to America. To-day the proportions are reversed—and the work done in Aberdeen for the United States is infinitesimal.

Ten years ago the American tariff was only 20 per cent. on manufactured granite articles. But with McKinley the tariff rose to the unprecedented figure of 40 per cent. That was the first decisive blow to Aberdeen's granite export trade with the United States. There have, it is true, been variations in the tariff since then, but from that first blow the trade has never rallied. In 1894 the notorious McKinley tariff was reduced by 10 per cent., but three or four years ago the tariff on granite imported into the States was increased to the almost prohibitive figure of 50 per cent. The enormous disadvantage Scottish granite merchants labour under because of this can readily be imagined. For every monument of the value of £100 manufactured in Aberdeen, and exported to America, £50 must be paid to the United States Government in addition to the ordinary charges for railway rates and shipping freights. The following statistics giving the value of the granite exported to the United States during the past twelve years show the disastrous effect which the tariff has had on the Aberdeen granite trade—and all the while American goods and tools are being poured in here duty free:—

1891 - - - - - -	£112,382
1892 - - - - - -	123,565
1893 - - - - - -	91,343
1894 - - - - - -	108,570
1895 - - - - - -	88,160
1896 - - - - - -	55,452
1897 - - - - - -	36,915
1898 - - - - - -	26,700
1899 - - - - - -	18,078
1900 - - - - - -	19,081
1901 - - - - - -	18,135
1902 - - - - - -	19,710

Last year, it will be observed, showed a slight increase on the totals of the three previous years, but this, be it said, was due rather to an abnormally brisk season in America than to any actual success on the part of the local granite merchants in combating the American tariff. But for the McKinley tariff, an additional £50,000 might have been distributed in wages by the employers in the granite trade of Aberdeen during the year—sufficient to give employment to 600 extra workmen.

The more favourable tariffs that prevail in the Colonies have induced many connected with the granite trade to consider with at least some small amount of sympathy the proposals for preferential tariffs with our Colonies. On granite exported to Canada the tariff is 20 per cent., to Africa only 10 per cent., and even that last minor sum may be returned after a time on compliance with certain specified regulations.

Electrical Notes.

New Surface-Contact Trams.—At the Bromley Town Hall, Bow Road, last week, an exhibition was given of a working model and a section of tramway line constructed upon the Dolter electric traction system. This is run by surface contact, and the merits claimed for it by the inventor, a French engineer, are cheapness, simplicity and safety as compared with either the conduit or the overhead methods. Wolverhampton is the only town in England which runs surface-contact tramways, although on another system, but in the course of the next few months the "Dolter" will be inaugurated on the borders of London. It has been in use for more than a year on a short length of tramway on the outskirts of Paris for purposes of trial, and has received the formal approval and authorization of the railway department of the French Ministry of Public Works. Each car carries a long iron skate or runner, so suspended that it just touches the tops of a number of iron blocks or studs embedded in the road so as to project slightly above the surface. Each of these studs forms the upper part of a small watertight box or chamber, in which is suspended a bell-crank lever. When the car passes over any of the studs the skate, which is magnetized, acting through the iron of the stud, attracts the lever and so completes the electric circuit. Power is obtained as in the conduit system from a generating station, and passes along an underground cable, and the completion of the electric circuit conducts the current from the cable to the motors in the cars. It is claimed that a line can be constructed at a cost of only £600 a mile in excess of the cost of the trolley installation.

Trade and Craft.

Velvril Paint.

Velvril—the invention of Mr. W. E. Reid, F.I.C., the well-known chemist—is prepared by treating castor oil and nitric acid, and incorporating nitro-cellulose with the product. The Velvril Co., Ltd., of 29, New Bridge Street, London, E.C., after having employed their patent medium for various purposes, are now introducing it as a paint. It contains no lead or linseed oil, is quick drying, and gives a smooth surface; but it is more especially noticeable for its damp-proof qualities, its elasticity and its resistance to acids and noxious gases. For use as a paint "Velvril" is thinned with a spirit to a working consistency, and dries as a tough skin on whatever it is applied to, whether iron, steel, wood, stone or cement. It can be made with metallic colours or in various ordinary colours; it can be washed with antiseptic solutions, and its covering powers compare favourably with oil paint. It has been used by Sir William Armstrong, Whitworth & Co. and Messrs. Vickers, Maxim for lacquering gun shells, and is now being tested by the War Office at Woolwich Arsenal (the results, we understand, having proved highly satisfactory up to the present). A test was made with it at the new War Office buildings now being erected in Whitehall by Messrs. Foster & Dicksee. Here some blocks of Portland stone were painted with "Velvril" and put in contact with very wet breeze-concrete; upon examination after four months the face and back of the stone were found to be quite unstained. The makers draw particular attention to its use as a waterproof covering on the haunch of an arch to prevent percolation and moisture from breeze-concrete staining the stone or going through the masonry. Priming colours are specially prepared as a basis for the finishing coat. The price of the paint is 8s. 6d. per gallon.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, Builders' Journal, *9, East Harding Street, E.C.*

Abercynon (Wales).—For the erection of a new infants' school at Abertaf Abercynon, for the Llanwonno School Board. Mr. A. O. Evans, architect, Pontypridd:—

D. Davies	£3,760
C. Jenkins & Son	3,700
Knox & Wells	3,400
J. Howells	3,130

Blaenau-Gwent (Abertillery).—For the erection of an infants' school at Blaenau-Gwent, Abertillery, Mon., to accommodate 300 children. Mr. R. L. Roberts, architect, Abercarn:—

D. Davies, Cardiff	£4,692	0	0
E. C. Jordan Newport	3.700	0	0
N. Bagley & Co., Abertillery	3,680	7	3
D. W. Richards, Ltd., Newport	3 635	0	0
A. P. Williams, Crickhowell	3,615	0	0
D. Lewis, Llanhilleth	3,597	0	0
J. Newcombe, Ebbw Vale	3,516	0	0
Gaen Brothers,* Abertillery	3,434	0	0
Smith Brothers, Newport	3,388	0	0

* Accepted.

Cambridge.—For works of sewerage at Grantchester, for the Chesterton Rural District Council. Messrs, Waters & Worrall, engineers, Cambridge:—

Swann Brothers	£4,827	9	8
Wilmott & Sons	3.620	0	0
Oak Building Co.	3.373	0	0
Langley Brothers, Haverhill	3,263	18	7
Jones & Sons	2,954	17	6
Wallace & Innes, Hitchen	2,900	0	0
Rayner Croydon	2,827	12	0
Redhouse	2.769	0	0
Flack,* Russell Street	2,765	10	3
Deards, London	2,650	0	0
Hinkins. Royston	2,382	0	0
Roberts & Co., London	2,235	14	6

[Engineers' estimate, £2,856.] [Rest of Cambridge.]

* Accepted.

Caterham.—For the supply of fire hydrants, &c., to the Caterham Asylum, for the Metropolitan Asylums Board:—

Mather & Platt, Ltd., S.W.	£3.653	0
J Blakeborough & Sons, Brighouse	2,534	17
Shand, Mason & Co., S.E.	2,436	0
Brightside Foundry and Engineering Co., Ltd., S.W.	2,059	0
Merryweather & Sons, Ltd., S.E.	2,048	0
J. & F. May, W.C.	1,970	0
H. F. Joel & Co., and T. Potter & Sons, United, Ltd., S.W.	1,766	0
J. Simpson & Co., Ltd., S.W.	1,670	0
Rosser & Russell, Ltd, S.W.	1,611	0

[Engineer's revised estimate, £1,600.]

Dover.—For providing and laying about 2.300 sq. yds. of Australian hardwood paving (karri or jarrah) for the carriageway of High Street, Dover, for the Town Council. Mr. Henry E. Stilgoe, A.M.I.C.E., borough engineer, Town Hall, Dover:—

Acme Wood Flooring Co., Ltd., N.E.	£1,503	7	6
General Contract Co., Folkestone	1,485	7	0
W. Griffiths,* Bishopsgate Street Without, E.C.	1,413	3	4

* Accepted.

Hughenden (Bucks).—For erection of new stables, Hughenden Manor, for Mr. Coningsby Disraeli, M.P. Mr. Arthur Vernon, architect, 29, Cockspur Street, London, S.W, and High Wycombe, Bucks:—

Nash & Sons	£2,197
Webster & Cannon	2,150
H. Flint	2,100
G. H. Gibson*	2,068

* Accepted.

Ipswich.—For additions to the theatre in Carr Street, Ipswich, for the Directors of the Ipswich Lyceum, Ltd. Mr. Walter Emden, architect, 105 and 106, Strand, London, W.C.:—

H. T. Linzell	£1,490
W. H. Bloomfield	1,400
Grimwood & Sons	1,372
Spencer, Santo & Co., Ltd., Felixstowe	1,350
T. Parkington & Son	1,200

[Rest of Ipswich.]

Ipswich.—For the erection of Wherstead Road Schools. Mr. Thomas W. Cotman, architect, Northgate Street, Ipswich:—

S. A. Kenney	£6.576	0	0
H. J. Linzell	6,317	0	0
F. C. Thurman	6,316	2	5
Grimwood & Sons	6 143	0	0
T. Parkington & Son	6,136	0	0
C. Roper	6,115	10	0
A. Sadler	5,929	0	0
Spencer Santo & Co.	5.750	0	0
E. West	5,699	0	0

Kirkby-in-Furness.—For the restoration of St. Cuthbert's Church tower, Kirkby-in-Furness, for the Executive Committee. Mr. J. Standen-Adkins, architect, 3, Maze Road, Kew:—

J. Hatch & Sons Lancaster	£520	0
W. Waite, Ulverston	413	10
Ashburner, Ltd., Dalton-in-Furness	389	13
J. S. Balderstone, Broughton-in-Furness	388	0
J. S. Balderstone*	370	0
Ashburner, Ltd.*	359	3

* Estimate for reduced scheme.

Leavesden (Herts).—For the supply of fire hydrants, &c., to the Leavesden Asylum, for the Metropolitan Asylums Board:—

Mather & Platt. Ltd., S.W.	£3,147	0
Shand Mason & Co., S.E.	2,520	0
Merryweather & Sons, Ltd., S.E.	£2,148	0
J. & F. May, W.C	2,072	0
J. Blakeborough & Sons, Brighouse	2,070	12
Brighside Foundry and Engineering Co., Ltd., S.W.	1,976	0
W. J. Fraser & Co., E.	1,915	
J. Simpson & Co., Ltd., S.W.	1,816	0
H. F. Joel & Co., and T. Potter & Sons, United, Ltd., W.	1,665	0
Rosser & Russell, Ltd.* 22, Charing Cross, S.W.	1,659	0

[Engineer's revised estimate £1,600.]

* Accepted.

Llandegla (Wales).—For the erection of a chapel. Mr. W. Moss, architect, 2, Temple Row, Wrexham:—

R. Roberts	£1 245
S. Moss	1.200
T. Williams	1,199
J. Harrison,* Coedpoeth	1.180

* Accepted.

London, S.E.—For the foundations of Union Street Parcel Office, for H.M. Office of Works, &c.:—

		Alternative Tenders.	
E. Brown & Son	£7,279	£7,395	18
Edwards & Medway	7,200	-	
H. A. Cunis	6,985	7,270	0
Johnson & Co.	6,830	—	
J. Shillitoe & Son	6,750	6,900	0
T. H. Kingerlee & Sons	6,699	6,897	0
J. A. Ewart	6,693	6,833	0
E. Lawrance & Sons	6,656	—	
Patman & Fotheringham, Ltd.	6,643	6 783	0
W. J. Renshaw	6,549	6,797	0
W. H. Lorden & Son	6,444	6,622	0
W. Downs	6,397	6,676	0
W. Shepherd	6,350	6,483	0
Perry & Co.	6,250	6,464	0
Kirk & Randall	6,238	6,497	0
J. Mowlem & Co.	6,194	6,226	0
B. E. Nightingale	6,179	—	
J. Chessum & Sons	6,177	6,296	0
W. King & Son	6,155	6,308	0
W. Lawrence & Son	6,149	6,349	0
Higgs & Hill, Ltd.	5,984	6,198	0
H. Lovatt	5,950	6,150	0
J. Shelbourne & Co.	5.903	6,101	0
J. Smith & Sons, Ltd.	5,797	5,998	0

* Accepted.

Romford.—For works of sewerage and drainage, or sewerage, drainage and repairs in the following roads or streets, or parts of roads or streets, or on lands in the parishes of Romford and Horchurch, for the Romford Urban District Council, viz.:—Victoria Road (part of), Heath Park Road, Brentwood Road (part of). Ardleigh Green Road (part of), Factory Road, Catherine Road, Hamilton Road, Margaret Road, Salisbury Road, Starling Lane to Brook. Mr. H. Ridge, surveyor:—

J. Meeston, Kensington, W.	£20,153	10	5
Peerless, Dennis & Co., Eastbourne	11,494	5	0
W. Iles, Southend-on-Sea	10,500	15	5
T. Adams, Wood Green, N.	10,276	10	7
G. Bell, Tottenham	10,216	0	0
Free & Sons, Maidenhead	10,148	7	4
W. Manders, Leyton	10,018	3	9
D. T. Jackson, Barking	9,919	2	0
B. W. Glenny, Romford	9.211	4	6
J. Jackson, Forest Gate	9,113	19	0
Wilson, Border & Co.,* Cromer Road, Romford	8,545	5	3

* Accepted. [Surveyor's estimate, £10,021 1s. 5d.]

Southend.—For the erection of eight houses, Camper Road, Southend-on-Sea, for Mr. T. Dowsett, J.P. Messrs. Burles & Harris, architects and surveyors, Southend-on-Sea:—

Smith & Chambers	£5,555
F. E. Woodhams	5,200
R. Elvy	4,846
W. E. Davey	4.440
J. Dowsett	4,380
Whur & Campkin	4,272
C. Wingrave	4,056
Dupont & Co.,* Southend	3,950

* Accepted.

Tredegar (Mon.).—For the erection of a cottage hospital at Tredegar. Mr. E. A. Johnson, F.R.I B.A., architect, Merthyr and Abergavenny. Quantities by the architect:—

Lattey & Co., Ltd., Cardiff	£3,429	19
J. Newcombe. Ebbw Vale	3,193	0
Lloyd & Tape, Barry	3,180	0
Thomas & Sons, Abergavenny	3,150	0
E C. Jordan, Newport	2,870	0
D. J. Vaughan,* Tredegar	2,784	0
W. P. Lewis & Co., Hereford	2,657	0

* Accepted.

West Ham—For making-up the following streets, for the West Ham Borough Council:—Hilda Road (part), Chester Road, Desford Road, Exning Road (part), Kimberley Road, Cheshunt Road and Knighton Road (part). Mr. John G. Morley, borough engineer:—

J. Jackson, Plaistow	£4,462
T. Adams, Wood Green	4.337
W. Griffiths & Co., Ltd, Bishopsgate	4,265
Parsons & Parsons, Ilford	4,032
D. T. Jackson, Barking	3,916
W. Manders, Leyton	3 869
G. J. Anderson,* 26, North Street, Poplar	3,612

* Accepted.

Willington (Durham).—For the laying of a cast-iron outfall sewer and building of tanks, filters and other works necessary for the construction of sewage-disposal works at Willington, near Durham, for the Willington Urban District Council. Mr. J. E. Parker, A.M.I.C E., engineer, Post Office Chambers, Newcastle-on-Tyne:—

G. Wells, Horton	£2,102	19	11
G. Hetherington, Coundon	1,931	2	0
Hardy & Atkinson, West Hartlepool	1,909	16	2
G. H. Bell, Bishop Auckland	1,841	16	8
J. Carrick, Durham	1,808	10	9
J. G. Kirtley, Sunderland	£1,775	0	0
T. A. Turnbull, Rowlands Gill	1,740	0	0
P. Frater, Howden-le-Wear	1,650	0	0
W. & J. Lant,* Dixon Terrace, Darlington	1,500	0	0

* Accepted.

Worcester.—For the widening of Breedon Cross Bridge, for the Worcestershire County Council. Mr. J. H. Garrett, county roads surveyor, Shire Hall, Worcester:—

J. White, jun., Handsworth, Birmingham	£2,173	4	0
A. Kellett & Sons, Ltd., Northfield	1,854	4	9
W. H. Gibbs, King's Heath	1,845	0	0
Currall, Lewis & Co., Birmingham	1,615	16	4
H. A. S. Fraser, Cardiff	1,509	0	0
C. Griffiths, Lye, Stourbridge	1,455	11	1
G. Trentham, Birmingham	1,350	0	0
R. W. Fitzmaurice & Co., Birmingham	1,339	3	0
G Law, Kidderminster	1,279	18	5
Cruwys & Hobrough, Gloucester and Birmingham	1,278	17	8

* Accepted.

Worcester.—For the rebuilding of Ten Acres Bridge, for the Worcestershire County Council. Mr J. H. Garrett, county roads surveyor, Shire Hall, Worcester:—

Kellett & Sons, Northfield	£2,599	0	10
J. White, jun., Handsworth	2,519	4	0
C. Griffiths, Lye, Stourbridge	2,470	2	0
H. A. S. Fraser, Cardiff	2,460	10	2
Currall, Lewis & Co., Birmingham	2,138	5	3
G. Law, Kidderminster	2,127	6	7
W. H. Gibbs, King's Heath	2,078	0	0
Cruwys & Hobrough, Birmingham	1,999	9	2
G. Trentham, Birmingham	1,889	7	7
R. W. Fitzmaurice & Co.,* Ltd., Birmingham	1,779	12	3

* Accepted.

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver.]

During the week ending June 20th sixteen failures in the building and timber trades in England and Wales were gazetted.

J. A. Hollands, builder, Marlow. R.O. June 6th.

C. Harris, builder, Wimbledon. R.O. June 12th.

W. Lloyd, builder, Hereford. R.O. June 12th.

F. Mills, builder, Bexhill. Liabilities £307; assets £540.

E. Howson, builder, Lincoln. Discharge granted, subject to two years' suspension.

C. H. Jackson, builder, Hove. Liabilites £2,599; assets £875.

J. Pyett & Sons, builders and house dealers, Anerley, Surrey. R.O. June 9th.

C. E. G. Day, builder and contractor, Cowden Village, Kent. R.O. June 12th.

J. Davis, plumber and decorator, Havant. R.O. June 6th. P.E., Portsmouth C.C., June 29th, at 11.30.

J. Flanders, carpenter and builder, Newport, Mon. P.E., Newport Town Hall, July 2nd, at 11.

S. Y. Brock & Son, builders and contractors, Alburgh. R.O. June 6th.

J. Gibson, junr., builder, Newburn. First meeting, O.R.'s, Newcastle-on-Tyne, June 24th, at 11.30. P.E., Newcastle C.C., July 9th, at 11.

M. Morris, builder, South Benwell. R.O. June 10th. First meeting, O.R.'s, Newcastle-on-Tyne, June 26th, at 11.30. P.E., Newcastle C.C., July 9th, at 11.

S. Cooper, builder, Kingston and Hampton Wick. Liabilities £5,788; £718 to rank for dividend; deficiency £565.

J. Vernon, builder and contractor, Eaton-by-Tarporley. First meeting, Royal Hotel, Crewe, June 26th, at 10.30. P.E., same, at 11.

R. Peck, builder, Chesterfield. R.O. June 11th. First meeting, Angel Hotel, Chesterfield, June 25th, at 2.30. P.E., Chesterfield C.C., July 17th, at 2.

S. Tucker, builder, Plymouth. R.O. June 11th. First meeting, 6, Athenæum Terrace, Plymouth, July 6th, at 11. P.E., East Stonehouse Town Hall, July 7th, at 12.

J. A. Harris, builder, Bristol. R.O. June 11th. First meeting, O.R.'s, Bristol, June 24th, at 11.30. P.E., Bristol Guildhall, July 3rd, at 12.

R. B. Powell, builder and decorator, Finsbury Park, London, N. R.O. June 11th. First meeting, Bankruptcy Court, June 29th, at 11. P.E., Bankruptcy Court, July 24th, at 11.50.

E. J. Charles, builder and contractor, Moseley. Liabilities expected to rank for dividend, £10,949. Debtor estimates a surplus of £23,000 from securities, but this entirely depends on his estimate of £35,000 for an arcade at Wolverhampton being realized.

The following companies are to be wound up:—

Argillite Slab Co., Ltd., Cardiff. E. S. Trezelles, 18, Cwrt-y-vil Road, Penarth, liquidator.

Transparent Art Painting Development Syndicate, Ltd.

A new Wesleyan Church at Sherwill is being erected at a cost of about £400. Mr. A. Lauder is the architect and Messrs. Cooke & Sons, of Barnstaple, are the builders.

At the Church of St. Mary, Charlton Kings, an oak screen has been placed in the south transept. Mr. W. H. Fry executed the commission in less than six months.

Complete List of Contracts Open.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	BUILDING:		
June 25	Cannock. Staffs–Bridge	Rural District Council	H. M. Whitehead, Council's Surveyor. Penkridge, near Stafford.
„ 25	Dewsbury–Boiler-house	Corporation	Borough Surveyor, Town Hall, Dewsbury.
„ 25	London, W.–Stabling, &c.	Ealing Town Council	C. Jones, Engineer, Town Hall, Ealing, W.
„ 25	Salford—Retort-house, Floor, &c.	Gas Committee	W. W. Woodward, Engineer, Gas Offices. Bloom Street, Salford.
„ 25	Mow-Cop—Tower	—	C. H. Fowler, Architect, The College, Durham.
„ 25	Barnstaple—Alterations, &c., to School	—	J. C. Southcombe, Architect, Barnstaple.
„ 25	Belfast—Hospital	Public Health Committee	A. Ferguson, Quantity Surveyor, Scottish Provident Bldgs., Belfast.
„ 25	Lutterworth—Additions, &c., to Workhouse	Guardians	W. M. Cowdell, 12 Greyfriars, Leicester.
„ 25	Maesteg, Wales—Alterations, &c., to Chapel	—	W. B. Rees, 37 St. Mary Street, Cardiff.
„ 25	Manchester—Walls. &c.	Gas Committee	C. Nickson, Superintendent, Gas Dept., Town Hall, Manchester.
„ 25	Merthyr Tydfil–Schools	School Board	J. Ll. Smith, 50 High Street, Merthyr Tydfil.
„ 25	Merthyr Tydfil, Wales—Alterations. &c., to School	School Board	J. Ll. Smith, 50 High Street, Merthyr Tydfil.
„ 25	Morley, Yorks—Re-erection of Mills	—	T. A. Buttery & S. B. Birds, Architects, Queen Street, Morley.
„ 25	Rochdale–Car Shed	Tramways Committee	S. S. Platt, Borough Surveyor, Town Hall, Rochdale.
„ 25	Rochester—Repairs, &c.. to Buildings	Burial Board	W. T. Callund, 2 South Avenue, Rochester.
„ 25	Thornbury, Yorks—Ten Houses	—	Walker & Collinson, 227 Swan Arcade. Bradford.
„ 26	Longwood, Yorks—House	—	P. Taylor & Co., Architects, Central Buildings, Milnsbridge.
„ 26	Sinnington, near Pickering—Restoration of Church	—	Vicar, Vicarage, Sinnington, near Pickering.
„ 27	Pontygwaith, Wales—Chapel	Soar Church Trustees	E. Davies, 8 Madeline Street, Pontygwaith.
„ 27	Tamworth—Stables	Industrial Co-op. Soc., Ltd.	J. W. Godderidge, 4 Bolebridge Street, Tamworth.
„ 27	Bangor, Ireland—Golf-house	Golf Club	R. H. Finlay, Rent Agent, Main Street, Bangor.
„ 27	Benllech Bay. Anglesey—Residence	Captain G. Jones	R. Davies, Architect, Bangor.
„ 27	Newton-le-Willows, Lancs—Two Cottages	Newton-in-Makerfield U.D.C.	C. Cole, Clerk, Town Hall, Earlestown.
„ 27	Darwen, Lancs—Bricks, &c.	Gas Committee	A. H. Smith, Gas Engineer, Darwen.
„ 29	Armagh—Six Shops	—	W. H. Stephens & Son, 13 Donegall Square North, Belfast.
„ 29	Shibden, Yorks—Two Houses	—	J. F. Walsh and G. Nicholas, Architects, Museum Chbrs., Halifax.
„ 29	Stockton-on-Tees—Conveniences	—	Borough Engineer, Borough Hall, Stockton-on-Tees.
„ 29	Stockton-on-Tees—Bridge	—	Borough Engineer, Borough Hall, Stockton-on-Tees.
„ 29	Trowbridge, Wilts—Repairing, &c., Market Hall	Urban District Council	H. G. Nicholson-Lailey, Town Surveyor. Town Hall, Trowbridge.
„ 29	Sunderland—Quarter Sessions, Police Court, Buildings, Fire Station, &c.	Corporation	W. & T. R. Milburn, 20 Fawcett Street, Sunderland.
„ 29	Battersea, S.W.—Tiles	—	H. R. F. Macay, Elec. Department, Lombard Rd., Battersea, S.W.
„ 30	Passage East, Waterford—Nine Cottages	Borough Council	R. G. Gethin, 17 Beresford Street, Waterford.
„ 30	Dunmore East, Waterford—Five Cottages	—	R. G. Gethin, 17 Beresford Street Waterford.
„ 30	Kirdford, Sussex—Churchyard Wall, &c.	—	Vicar, Kidford, Billingshurst.
„ 30	Pembroke Dock—Schoolroom, &c.	—	G. Morgan & Sons, 24 King Street, Carmarthen.
„ 30	Croydon—146 Cottages	London County Council	Architect s Dept. (Housing Section), 19 Charing Cross Road, W.C.
„ 30	Barnacre, near Garstang—Two Cottages	—	W. Wearing, Engineer, Grizedale Lea Reservoir, Barnacre.
„ 30	Sheffield—Power Station Works	Electric Light Committee	S. E. Fedden, Corporn. Elec. Supply Dept., Commercial St, Sheffield.
„ 30	Uxbridge—Store, &c.	Urban District Council	W. L. Eves, 54 High Street, Uxbridge.
„ 30	Whitehaven—Alterations, &c., to Schools	—	M. Dees, Somerset House, Whitehaven.
July 4	Louth, Lincs—Science Buildings	Grammar School Governors	E. E. Bentley, 1 Pelham Chambers, Old Market Place Grimsby.
„ 1	Stockwell, S.W.—Repairing, &c., Hospital	Metropolitan Asylums Board	T. D. Mann, Clerk. Board's Offices, Embankment, S.E.
„ 3	Great Crosby–Alterations, &c.. to Office	Urban District Council	Anderson & Crawford, 36 Dale Street, Liverpool.
„ 4	Romsey—Cottage and Alterations to Police Station	County Council	W. J. Taylor, County Surveyor. The Castle, Winchester.
„ 4	Catford, S.E.—Extensions of Works	J. Robertson & Son	T. George & Sons. Architects, Old Square, Ashton-under-Lyne.
„ 4	West Bay, near Bridport—Coastgard Buildings	Admiralty	Superintending Civil Engineer, H.M. Breakwater, Portland.
„ 4	Paddington—Walls, &c.	Borough Council	E. B. B. Newton, Borough Surveyor, Town Hall, Paddington, W.
„ 4	London, N.W.—Orphanage	—	S. G. Goss, 3 Broad Street Buildings, Liverpool Street, E.C.
„ 6	Grimsby—School Buildings	—	E. E. Bentley, 1 Pelham Chambers, Old Market Place. Grimsby.
„ 6	Belfast—Alterations, &c., to Church	—	T. Houston, Architect, King's Court, Wellington Place, Belfast.
„ 6	Glanamman, Wales—300 Cottages	Colliery Co.	D. J. Michael, 97 Oxford Street, Swansea.
„ 6	Glasgow—Buildings	Caledonian Railway Co.	Company's Divisional Engineer, Princess St. Station, Edinburgh.
„ 6	London, W.—Wall, &c.	Paddington Borough Council	E. B. B. Newton, Borough Surveyor, Town Hall, Paddington, W.
„ 6	Nantymoel. Ireland–Extension of Premises	Industrial Co-op. Society	Secretary, Society's Offices, Nantymoel.
„ 6	Preston, Lancs—Brickwork	Guardians	Mr. Whitwell, Engineer, Fulwood Workhouse, Preston, Lancs.
„ 6	Micklewood, Norfolk—Alterations, &c., to Workhouse	Guardians	J. O Bond, 15 Upper King Street, Norwich
„ 6	London, E.—Alterations, &c.	Guardians	F. J. Tootell, 74 Vallance Road, Whitechapel E.
„ 6	Hornsey– Erection of Buildings	Urban District Council	E. J. Lovegrove, 99 Southwood Lane, Highgate, N.
„ 7	Portsmouth—Enlargement of Post Office	Commnrs. of H.M. Works, &c.	Secretary, H.M. Office of Works, Storey's Gate, London, S.W
„ 8	Marylebone—Block of Buildings	Borough Council	J. Wilson. Town Clerk, Town Hall, Marylebone Lane, Oxford St., W.
„ 11	Langley Bridge, Sussex—Widening Bridge	East Sussex C.C.	F. J. Wood, County Surveyor, County Hall, Lewes.
„ 14	London, S.E.—Four Blocks of Dwellings	Bermondsey Borough Council	F. Ryall, Town Clerk, Town Hall, Spa Road, S.E.
„ 13	Elan Valley, Rhayader, Radnorshire—Dwelling House	Corporation	J. Mansergh & Sons, 5 Victoria Street, Westminster S.W.
„ 15	Dorset—Repairing, &c., Police Stations	Joint Committee	W. J. Fletcher, County Surveyor's Office, Wimborne.
„ 21	Buckfastleigh—Pointing, &c., to Church Spire	—	A. Warren, Surveyor. Buckfastleigh.
No date	Watford—School	School Board	W. H. Syme, 4 High Street, Watford.
„	Grayne, near Rochester—Restoration of Church	Church Committee	A. Baker & Day, Solicitors, The Precincts, Rochester.
	ENGINEERING:		
June 25	Rochdale—Overhead Equipment	Corporation	Lacey & Sillar, 78 King Street, Manchester.
„ 25	Sheffield—Cables	Electric Light Committee	S. E. Fedden, Corporation Electric Supply Department, Commercial Street, Sheffield.
„ 25	Hull—Steam Pipes, &c.	Electric Light Committee	City Treasurer, Town Hall Hull.
„ 25	Napsbury, near St. Albans–Hot-water Warming Apparatus	Asylum Committee	Young & Brown, 104 High Holborn, W.C.
„ 25	Ashford, Middlesex—Alterations to Pumps	—	M. G. M. Taylor, 27 Great George Street, Westminster, S.W.
„ 25	Manchester—Refrigerating Machinery	Markets Committee	City Surveyor, Town Hall, Manchester.
„ 26	Goring-on-Thames—Water Supply Extensions	Gas and Water Co.	G. H. Robus, Engineer, Mansion House Chambers London, E.C.
„ 27	Thrapston, Northants—Waterworks	Rural District Council	J. Chadwick, Civil Engineer, Bletchley.
„ 27	Darwen, Lancs—Retorts	Gas Committee	A. H. Smith, Gas Engineer, Darwen.
„ 27	North and South Shields—Steam Paddle Ferryboat	Tyne Improvement Commissioners.	R. Urwin, Commissioners' Offices, Bewick St., Newcastle-on-Tyne.
„ 29	Dungannon, Ireland—Waterworks	Joint Committee	J. H. H. Swiney, Avenue Chambers, Belfast.
„ 29	Glasgow—Renewal of Superstructures of Underbridges	Caledonian Railway Co.	Company's Divisional Engineer, Princes St. Station, Edinburgh.
„ 29	Govan, Scotland—Steam Piping, &c.	Town Council	T. C. Parsons, Burgh Electrical Engineer, Aden Street, Govan.
„ 29	Kettering—Steel Trusses. &c.	Urban District Council	T. R. Smith, Surveyor, Market Place, Kettering.
„ 30	London, E.C.—Rolling Stock, Fittings, &c.	South Indian Railway Co.	Secretary, 55 Gracechurch Street, E.C.
„ 30	Salcombe, Devon–Waterworks Extension	Urban District Council	Shone & Ault, 47 Victoria Street, Westminster S.W.
„ 30	North and South Shields—Floating Landing Stages	Tyne Improvement Commissioners.	R. Urwin, Commissioners' Offices, Bewick St., Newcastle-on-Tyne.
„ 30	London, E.—Sheet Piling	London County Council	Engineer's Department County Hall, Spring Gardens, S.W.
„ 30	Grasmere, Westmorland—Sluice Valves, &c.	Urban District Council	W. Fox & R. A. Tatton, 44 Mosley Street, Manchester.
„ 30	Grasmere, Westmorland—Reservoir, &c.	Urban District Council	W. Fox & R. A. Tatton, 44 Mosley Street. Manchester.
„ 30	Worthing–Refuse Destructor, &c.	Corporation	F. Roberts, Borough Engineer, Municipal Offices, Worthing.
„ 30	Darley Dale, Derbyshire—Waterworks	Urban District Council	G. & F. W. Hodson, Engineers, Loughborough.
„ 30	Barcelona—Boilers	Admiralty	Secretariat of Arsenal, Central Offices, Admiralty, Barcelona.
„ 30	Sheffield—Electric Power Station, &c.	Electric Light Committee	S. E. Fedden. Coropration Electric Supply Dept., Commercial Street, Sheffield.
„ 30	Brussels–Railway Line	Societe Nationale des Chemins de Fer, Vicinaux.	M. Dartevelle, Rue de Turquie No. 18, St. Gillés, Bruxelles.
July 1	Rangoon—Electric Supply Undertaking	Municipal Committee	Ogilvy, Gillanders & Co., 67 Cornhill, E.C.
„ 1	Knutsford—Steam Mains, &c.	Bucklow Union Guardians	R. J. M'Beath, Architect, Birnam House, Lale.
„ 1	Knutsford—Cooking Apparatus	Bucklow Union Guardians	R. J. M'Beath, Architect, Birnam House, Lale.
„ 1	Knutsford—Washhouse and Laundry Fittings	Bucklow Union Guardians	R. J. M'Beath, Architect, Birnam House, Lale.
„ 1	London, E.C.—Tank Engines	East India Railway Co.	C. W. Young, Secretary, Nicholas Lane, London, E.C.
„ 1	Rochester—Timber Wharfing	Corporation	W. Banks, City Surveyor, Guildhall, Rochester.
„ 1	East India—Tank Engines	Railway Co.	Company's Offices, Nicholas Lane, London, E.C.
„ 1	Coventry–Laundry Machinery, &c.	Guardians	T. F. Tickner, 2 High Street Coventry.
„ 1	Hull–Widening Bridge	North Eastern Railway Co.	W. J. Cudworth. Company's Engineer, York.
„ 2	Coventry–Pipework, &c.	Corporation	J. A. Jeckell, Engineer, Electricity Works, Sandy Lane, Coventry.
„ 4	Bristol—Gangways	Electrical Committee	H. F. Proctor, City Electrical Engineer Feeder Road, St. Phillips.
„ 6	Madrid–Waterworks	—	Direccion General de Administracion Local Madrid.
„ 6	Preston—Boilers	Guardians	Mr. Whitwell, Engineer, Fulwood Workhouse, Preston, Lancs.
Sept. 12	Sydney–Electric Tramway Generating Set	Railway Commissioners	Agent-General for New South Wales, 9 Victoria Street, S.W.
„ 28	Launceston. Tasmania—Electric Meters	—	J. Terry & Co., 7 Great Winchester Street, E.C.
Oct. 30	Marina, Upper Barracca, Malta—Lift	Crown Agents for the Colonies	Receiver-General and Director of Contracts, Valletta, Malta.

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NOTE.—Advertisements for this page must reach the Office not later than 5 o'clock p.m. on Monday.

Complete List of Contracts Open—*continued.*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	FURNITURE:		
June 25	Salford—Furniture, &c.	Union Guardians	H. Lord, 42 Deansgate, Manchester.
July 1	Parkeston—Furnishing Schools	Ramsey School Board	J. W. Start, Architect, Colchester.
	IRON AND STEEL:		
June 25	Leeds—Rails, &c.	Tramways Committee	J. B. Hamilton, Genl. Manager, Tramways Offices, City Sq., Leeds.
„ 26	Nottingham—Cast-iron Pipes &c.	Water Committee	S. Moore, Water Manager, St. Peter's Church Side, Nottingham
„ 27	Darwen, Lancs—Wrought-iron Tubes, &c.	Gas Committee	A. H. Smith, Gas Engineer, Darwen.
„ 27	Stranorlar, Ireland—Rails, &c.	Donegal Railway Co.	W. R. Lawson Secty., Stranorlar Station, co. Donegal, Ireland.
„ 29	Branksome, Dorset—Wrought-iron Railing	Urban District Council	S. J. Newman, Council's Surveyor, Council Buildings, Branksome.
„ 30	Grasmere, Wesmorland—Pipes, &c.	Urban District Council	W. Fox & R. A. Tatton, 44 Mosley Street, Manchester.
„ 30	London, E.C.—Iron, Steel, &c.	South Indian Railway Co.	Secretary, 55 Gracechurch Street, E.C.
„ 30	London—Iron Plate Workers' Wares, Cast-iron Block	Admiralty	Admiralty Pattern Rooms, Great Western Chambers, Livery Street, Birmingham.
July 6	Dublin—Girders	Great Northern Rly. Co. (Ireland)	Company's Engineer-in-Chief, Dublin.
	PAINTING AND PLUMBING:		
June 25	Rochester—Painting, &c. to Buildings, &c.	Burial Board	W. T. Callund, 2 South Avenue Rochester.
„ 25	Walsall—Painting Workhouse	Guardians	Master of the Workhouse Walsall.
„ 26	Nottingham—Lead Piping, Lead	Water Committee	S. Moore, Water Manager, St. Peter's Church Side, Nottingham.
„ 27	Leeds—Painting and Decorating Chapel	———	J. Hartley, 14 Butts Court, Leeds.
„ 27	Verwig, Cardigan—Painting, &c., Chapel	———	T. James, Ffynoncyff Farm, Verwig, Cardigan.
„ 29	Morley—Painting	Corporation	W. E. Putnam, Borough Engineer, Town Hall, Morley.
„ 29	Jarrow—Painting Schools	School Board	H. M. Adam, Higher Grade School, Jarrow.
„ 29	Stratford-on-Avon—Painting, &c.	Town Council	R. Dixon, Borough Surveyor, Municipal Offices, Stratford-on-Avon.
„ 29	Trowbridge Painting, &c., Market Hall	Urban District Council	H. G. Nicholson-Lailey, Surveyor, Town Hall, Trowbridge, Wilts.
„ 29	East Ham—Whitewashing Latrines and Urinals	School Board	H. C. Padgett, Board's Clerk, School Board Offices, East Ham, E.
„ 29	East Ham—Painting, &c., Schools	School Board	H. C. Padgett, Board's Clerk, School Board Offices, East Ham E.
„ 30	London, E.C.—Oils and Colours	South Indian Railway Co.	Secretary, 55 Gracechurch Street, E.C.
July 1	London, S.W.—Painting, &c., Town Hall	Fulham Borough Council	Borough Surveyor, Town Hall, Fulham, S.W.
„ 1	Tylorstown, Wales—Painting, &c., Chapel, &c.	Trustees	J. E. Jones, Hendrefodwg House, Tylorstown.
	ROADS AND CARTAGE:		
June 25	Lewes—Materials	Town Council	Borough Surveyor Town Hall, Lewes.
„ 25	London, W.—Making-up Four Roads	Ealing Town Council	C. Jones, Borough Engineer, Town Hall, Ealing, W.
„ 25	Romford—Works and Materials	Urban District Council	J. Turvey, Surveyor, Romford.
„ 25	North Walsham—Granite, &c.	Urban District Council	E. J. Simpson, Council's Surveyor, North Walsham.
„ 25	Basingstoke—Carts	Works Committee	F. R. Phillips, Borough Surveyor, Town Hall, Basingstoke.
„ 25	Luton—Paving, &c., to Streets	Town Council	G. Sell, Town Clerk, Town Hall, Luton.
„ 25	Stockport—Street Works	Highways & Sewers Committee	J. Atkinson, Borough Surveyor, St. Petersgate, Stockport.
„ 27	Royton, near Oldham—Setts	Urban District Council	T. Bleasdale, Surveyor, Town Hall, Royton, near Oldham.
„ 27	Stratford-upon-Avon—Road Stone	Town Council	R. Dixon, Borough Surveyor, Municipal Offices, Stratford-on-Avon.
„ 27	Maidstone—Cement Kerbing	Kent County Council	F. U. Ruck, 86 Week Street, Maidstone.
„ 28	London N.E.—Making-up, &c., Roads	Hackney Borough Council	N. Scorgie, Borough Engineer, Town Hall, Hackney, N.E.
„ 29	Bedford—Materials	Corporation	R. O. Seacombe, Clerk, Town Hall, Bedford.
„ 29	Witham, Essex—Granite	Urban District Council	W. B. Blood, Clerk, District Council Office, Witham, Essex.
„ 29	Witham, Essex—Slag	Urban District Council	W. B. Blood, Clerk, District Council Office, Witham, Essex.
„ 29	Kettering—Tar, Macadam, &c.	Urban District Council	T. R. Smith, Surveyor, Market Place, Kettering.
„ 30	Blackwell, Mansfield—Road Improvement	Rural District Council	H. Silcock, 67 West Gate, Mansfield.
„ 30	Croydon—Road Repairs	Town Council	Borough Road Surveyor, Town Hall, Croydon.
„ 30	Dover—Materials	Town Council	Town Clerk, Castle Hill House, Dover.
„ 30	Handsworth, Staffs—Making-up Road	Urban District Council	H. Richardson, Surveyor Council House, Handsworth.
July 1	Branksome, Dorset—Steam Watering Van	Urban District Council	S. J. Newman, Council's Surveyor, Council Buildings, Branksome, Dorset.
„ 1	Lewes—Hire of Steam Rollers, &c.	East Sussex County Council	F. J. Wood, County Surveyor, County Hall, Lewes.
„ 1	Fulham—Making-up and Paving Carriageway, &c.	Borough Council	F. Wood, Borough Surveyor, Town Hall, Fulham. S.W.
„ 3	Branksome, Dorset—350 tons Granite, &c.	Urban District Council	S. J. Newman, Council's Surveyor, Council Buildings, Branksome, Dorset
„ 4	Wirral, Chester—Road	Rural District Council	T. Davies, 33 Kingsland Road, Birkenhead.
„ 6	Dorking—Making-up Road	Urban District Council	G. S. Matthews, Town Surveyor, 64 South Street, Dorking.
„ 8	Ryton—Road Improvement Works	Urban District Council	J. P. Dalton, Engineer, Council Offices, Ryton.
„ 10	Halesworth, Suffolk—Granite	Urban District Council	C. H. White, Clerk, Halesworth, Suffolk.
„ 15	Hailsham, Sussex—Steam Rolling	Rural District Council	E. Catt, 17 London Road, Hailsham.
	SANITARY:		
June 25	Lutterworth—Sanitary Improvements, &c.	Guardians	T. C. Bodycote, Clerk, Workhouse, Lutterworth.
„ 25	Oldbury—Sewer, &c.	Public Works Committee	T. H. Skipton, Town Surveyor, Public Buildings, Oldbury.
„ 26	Ferrybridge, Yorks—Sewerage Works	Pontefract R.D.C.	J. Waugh, Engineer, Sunbridge Chambers, Bradford.
„ 29	Dunfermline—Drainage Extension, &c.	District Committee	Kyle, Dennison & Laing, 13 George Street, Edinburgh.
„ 29	Wangford—Earth Closets	Guardians	A. Polls, Architect, Beccles.
„ 30	Wallsend—Scavenging, &c.	Town Council	G. Hollings, Borough Surveyor, Corporation Offices, Wallsend.
„ 30	Barcelona—Sewers	City Extension	Directorate-General of Ministry of Agriculture, Industry, Commerce and Public Works, Madrid.
July 1	St. Columb, Cornwall—Sewers	Rural District Council	R. H. Worth, 42 George Street, Plymouth.
„ 1	Watford—Sewer and Drain, &c.	Urban District Council	H. M. Turner, Clerk to Board, Watford Place, Watford.
„ 1	Aldershot—Sewer, &c.	Urban District Council	Council's Surveyor, Council Offices, Victoria Road Aldershot.
	TIMBER:		
June 29	York—Creosote Oil	North-Eastern Railway Co.	E. H. Clark, Stores Superintendent, Gateshead.
„ 30	Slough—Firewood	Eton Union Guardians	R. H. Barrett, Clerk, Slough, Bucks.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &C.	BY WHOM ADVERTISED.
July 15	Newark-upon-Trent—Grammar School, &c.	£25, £15, £.0.	———	G. Tallents, Clerk to Governors, Magnus Grammar School, Newark-upon-Trent.
„ 20	Taunton—Library	£30, £20, £10.	10s. 6d.	G. H. Kite, Town Clerk, Municipal Buildings, Taunton.

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AND ARCHITECTURAL RECORD.

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The Building Trade in South Africa. An emigrants' information branch has been opened at 96A, Victoria Street, Westminster, S.W., under the auspices of the Agent-General for the Cape of Good Hope, and as the direct outcome of Sir Gordon Sprigg's wishes This branch is in the charge of Mr. Lewis Atkinson, through whose courtesy we are able to give some first-hand information in regard to the building trade in South Africa. Let it at once be stated that in Cape Colony at the present time there is an urgent demand for all building operatives. Master-builders in Cape Town, Port Elizabeth and in up-country settlements—such as Johannesburg (the ratable value of which is now £36,500,000)—are badly in need of men. The emigrants' information branch above mentioned is in weekly communication with its labour bureau at Cape Town, and we are informed that between seventy and eighty carpenters are now required in Port Elizabeth by the Master-Builders' Association, and also seventy-five carpenters for the Cape Government railways. The latter is an especially good opportunity. The wages are from 11s. to 12s. a day, and the hours 48 per week—overtime is allowed for at the rate of time and a quarter for the first two hours, after that (and on Sundays) time and a half. A third-class free passage out is given, with half-pay on voyage; the agreement being for one year, and the Government having the right to extend it for another two years. If men are incompetent or are dismissed for misconduct they are required to refund the passage money and the half-pay on voyage. In the usual cases of men wishing to go to South Africa, the Government provides a passage for eight guineas (which is two guineas less than the shipping companies' rates), requiring them—if they have no capital—to deposit five pounds with the shipping company, which enables them to obtain from the Agent-General a permit to land, and in producing their letter of credit at the port the shipping company refund to them the £5. It will thus be seen that the Government is doing all it can to encourage emigration to the Cape—that is, the emigration of Britishers, who shall find employment rather than Poles, Russian Jews and other foreigners. We have already said that the demand for workmen is immediate, because the great building boom is only just commencing, and hundreds of houses are being erected as the settlement of the country proceeds. From the figures given it will be seen that a carpenter, for example, can earn about £3 10s. a week, which is very good pay when, on the computation of Mr. Atkinson, he can live comfortably—board and lodging—for 25s. a week. As for architects' prospects in South Africa, we have on previous occasions stated that there are many men already on the spot who are familiar with all the local conditions, having been in practice before the war, and consequently architects fresh from this country would have much to learn: but we are informed that there is a substantial demand for draughtsmen and assistants. It should be clearly understood, however, that there is practically no likelihood of engagements being obtained by letter from this country—young men must go to the colony and make personal application, never fearing that if they have any grit they will find profitable employment. Still other openings are afforded to builders' merchants and makers of brick and quarry machinery. With characteristic backwardness British makers are allowing Americans to look after these interests; and in this connection we would mention that by far the best results are secured by sending a representative from this country, instead of leaving matters to an agent who pushes most those things which pay him best. It is interesting to note that building regulations are now being more stringently enforced in Cape Colony. At Kimberley it is no longer permitted to erect houses of corrugated iron alone: at Cape Town sandstone from Saldana Bay and granite from the Paarl are largely used.

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The Wellington Memorial THE plaster cast on which Mr. Tweed has been working for some time is now in position on the Wellington memorial in St. Paul's Cathedral—under the second arch from the dome on the north side of the nave. The cast was taken from Alfred Stevens's original full-size model which was so disgracefully hidden in the vaults of the cathedral. This original model was deficient in two details—the tail and one of the hind hoofs—and it was to supply these deficiencies (which, however, are shown on Stevens's small sketch model, now at South Kensington) that Mr. Tweed was engaged by the private committee which forestalled Sir Edward Poynter. It will be remembered that the selection of Mr. Tweed for the task gave rise to a burst of disapproval from certain quarters, and it was largely to set that criticism at rest that the committee decided to have the finished model placed in position on the summit of the memorial. The model was brought to the cathedral last week, and actually placed in position two days ago. At present it is hidden by the scaffolding, but when this has been taken down it will be possible to form a correct judgment of Mr. Tweed's work, in comparison with the original model and Stevens's sketches, which we understand are to be placed beside the memorial so that everyone may see exactly what has been done by the living sculptor to the great work of a dead master.

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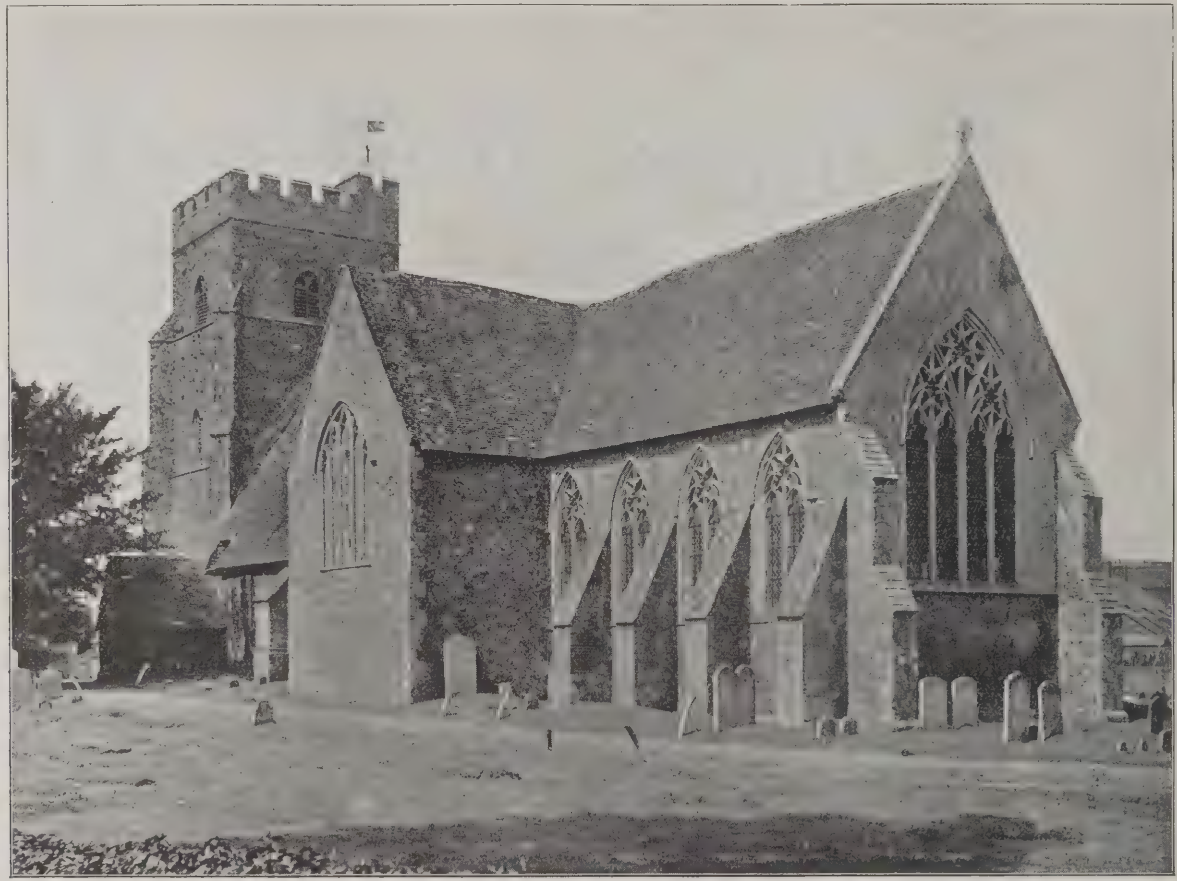
Prof. Petrie's Latest Discoveries. PROF. FLINDERS PETRIE, the doyen of Egyptologists, announces further discoveries at Abydos. In a depth of about 20ft. below the old temple site no fewer than ten successive temples, ranging in age from 5,000 to 500 B.C., have been brought to light. In a letter to the "Times" Prof. Petrie says: "To separate these buildings was an affair of anatomy rather than spade work; the walls of mud brick were so commingled with the soil that incessant section-cutting with a sharp knife was the only way to discriminate the brickwork. Often only a single course of bricks or a thin bed of foundation sand was all that told of the great buildings which had existed here for centuries. Over 5,000 measurements were taken for the plans and levels . . . . . The discoveries of the civilization of the first dynasty, the beginning of the kingdom, expand what we already had from my work in the Royal Tombs. Of Menes, the founder, we have part of a large globular vase of green glaze with his name inlaid in purple; thus polychrome glazing is taken back thousands of years before it was previously known to exist. The free use of great tiles of glaze for wall coverings shows how usual the art was then. In the highest art of delicate ivory carving there are several pieces of this age; especially the figure of an aged king, which for its subtlety and character stands in the first rank of such work, comparable to the finest carvings of Greece or Italy. We must now reckon the earliest monarchy as the equal of any later age in such technical and fine art. Pottery of forms and material quite unknown in Egypt also belongs to this remote age; and it proves to be identical with that in Crete of the late neolithic age. . . . ." Everyone who has followed Prof. Petrie's splendid excavations in Egypt will be eager to visit the collection which is to be exhibited at University College, Gower Street, W.C., from July 1st to the 25th.



CHARTHAM CHURCH.

Views and Reviews.

Canterbury.

This book has been published by the Canterbury Chamber of Trade with the assistance of the Corporation. It is very fully illustrated from excellent photographs; indeed, the book is perhaps most acceptable for these illustrations, which form such a pleasant record for those who are familiar with the city and are such exact guides to those who have never visited it; but the letterpress is none the less interesting, the cathedral having been dealt with by the late Dean Farrar; St. Augustine's Abbey and St. Martin's Church by the Rev. Charles F. Routledge, M.A., F.S.A., honorary canon of Canterbury; and the rest of the volume edited by Mr. Sebastian Evans and Mr. Francis Bennett-Goldney, F.S.A., honorary director of the Royal Museum at Canterbury.

Canterbury has of course a history going very far back. As a Roman town—Durovernum—it was of considerable importance, more especially from the fact that here the roads met from the three Kentish fortresses Richborough, Dover and Lymne, whence the great military road—Watling Street—stretched out into England. But Canterbury is more famous as having been the gateway of Christianity in Britain—the nucleus of the church, its influence so increasing as to become the primate's see, culminating with the beautiful cathedral. With a history going so far back it is only natural that many ancient relics are to be seen in its buildings.

Dean Farrar has told the history of the cathedral in a manner interesting to the layman and to the architect—of its very early foundation, the destruction by fire of several succeeding churches, the rebuilding by Lanfranc about 1077 and later by Ernulf, who re-erected it "so much more splendidly," says William of Malmesbury, "that nothing like it could be seen in England for the lustre of its glass windows, the brightness of which attract the wondering eyes to the summits of the vaulting." But before fifty years had passed (*i.e.*, in 1174) the fabric was again destroyed by fire. The work of rebuilding was undertaken by William of Sens, who, however, fell 50ft. from a scaffolding and injured himself so severely that he was obliged to resign his task to another—William the Englishman. The choir and east end of the cathedral and the upper part of the exterior walls are by these two men, being Transitional work. "Of previous work, besides the fragments of pre-Norman architecture in the crypt, we have Lanfranc's plinth and small blocks of Caen stone worked into the walls in the nave and western transept; the foundation piers of the central tower in the crypt; a door in the east cloister, and above it three windows of the old dormitory. Of Prior Ernulf's and Conrad's work (1026–1106) we have the round-arched masonry of the crypt, parts of the outer walls, of the Dark Entry (famous for the ghost of Nell Cook), and of the monastic kitchen. Of later Norman work (1135–1145) we have the transept towers, the lavatory tower (the so-called baptistery), the treasury, the earliest example of diagonal rib-vaulting, the Green Court gate, the Norman staircase, and the remarkable sculptured ornament of the alternate shafts and capitals of Prior Ernulf's columns in the crypt." Then came the Early English work—including the "Chair of Augustine"—Henry of Eastry's stone screen across the choir (of the Decorated period and formerly painted in bright colour), the Perpendicular nave and cloisters (the latter originally erected in the Early English style), the central tower—also called the Angel Steeple and Bell Harry Tower (built 1495–1503)—Christ Church gate (1517), &c.

The ruins of St. Augustine's Abbey, though fragmentary, are of unique interest, and the excavations are still being carried on there under the superintendence of Mr. Sebastian Evans and Mr. George Hubbard, the consulting architect to the city. It is worthy of note that a missionary college stands on the site, having been designed by Butterfield, who incorporated the ancient remains with his own work.

Another ecclesiastical foundation of great interest is St. Martin's Church, the subject of never ending controversy on account of its many features attributable to Roman or Saxon days.

Canterbury, indeed, has so many interesting buildings that we cannot attempt to mention a tithe of them—the city walls (mostly of the fifteenth century), the Guildhall, Marlowe's birthplace in St. George's Street, the castle, St. John's Hospital, &c. Round about are numerous villages with other buildings of interest—such as the churches at Hackington, Harbledown, Thanington, Chartham (the windows of which are fine examples of the transition between the Decorated and Perpendicular styles), Chilham, Charing, Fordwich and Barfreston: all of which are dealt with in this book.

"The Ancient City of Canterbury." Published by Cross & Jackman, Canterbury. Price 1s. with stiff paper covers and 2s. 6d. in cloth; postage 5d. extra. Copies free to public libraries, hotels, steamships, &c.

A new Technical Dictionary.

"In these days, when people want to do things rapidly, it is frequently impossible, without undue labour, to go to original sources for one's knowledge. For the sake of saving time, we are therefore driven to consult books of reference. This becomes specially necessary in the case of technical terms; and I have no doubt there is a field of usefulness for a dictionary which will explain their meaning." We can readily endorse these introductory words by Mr. Cl. Le Neve Foster, D.Sc., F.R.S., professor of mining at the Royal College of Science, London. With the first part before us, we are able to form an opinion of what the dictionary will eventually amount to. The definitions are concise and clear and range over a wide field. It will serve our purpose to state that this first part includes definitions of "Abyssinian wells," "access pipe," "air-tight stoppers," "Albolite cement," "alternating valve cistern," "artificial stone" and "bacterial contact bed," so that it will be of use to architects, surveyors, sewage engineers and others. The book is printed in very legible type and is illustrated. It will be issued in eighteen parts, price 2s. nett. each.

"The Technical Dictionary-Cyclopædia," edited by Philip R. Björling, C.E., and Frederick T. Gissing, M.I.P.S. London: Rebman, Ltd., 129, Shaftesbury Avenue, W C.

New Edition of Stephenson's "Estimating."

The chief reason why this book is so much to be recommended is—that the author has set about his task in the only proper way, by taking the cost of materials and labour on each item and so arriving at the total estimate, adding the profit afterwards. The prices in this new edition have been carefully revised in accordance with the continued increase in the cost of building, and the book is thus made thoroughly trustworthy and up-to-date. It is practically the only book on the subject.

"Estimating: a Method of Pricing Builders' Quantities for Competitive Work," by George Stephenson. Fifth Edition. London: B. T. Batsford, 94, High Holborn, W.C. Price (reduced) 4s. 6d. nett.

Some Old Doorways.

This book makes an acceptable addition to one's library not only for the seventy collotype reproductions from Mr. Davie's excellent photographs but also for the accompanying letterpress and sketches by Mr. Tanner. It is evident that the photographs first suggested the issue of the book and that the letterpress was invited later to "carry" them, a difficult task which Mr. Tanner has executed with considerable skill, so that the matter, instead of being a disjointed series of archæological notes, runs well together. Mr. Tanner has exercised his critical faculty a great deal in considering these doorways, and we must say that his criticism is very acute and reasonable. The doorways

THE NAVE OF CANTERBURY CATHEDRAL LOOKING EAST.

CANTERBURY CATHEDRAL FROM THE NORTH SHOWING THE NORMAN LAVATORY TOWER.

illustrated date from the sixteenth century to the time of the brothers Adam, including those to simple brick houses, to larger town and country residences, and to mansions such as Hatfield and Aston Hall. First come examples in which the Gothic tradition still lingers, finding uneasy expression in the new style so fresh from Italy; then, when masters like Inigo Jones had set a great example, follow more homogeneous designs; then doorways of still better proportions—such as that to the Conservative Club at Lewisham; later the shell porch, and so on to the days of the Adelphi. In reading the letterpress it is easy to turn to the plates and to follow the writer's observations—a most desirable feature—besides which we must commend the publisher for having inserted Mr. Tanner's sketches in the midst of the matter relating to them. The book will be prized by all interested in architecture, forming a pleasant record of much beautiful work.

"Old English Doorways" illustrated from photographs by W. Galsworthy Davie, with notes and sketches by H. Tanner, junr., A.R.I.B.A. London: B. T. Batsford, 91, High Holborn, W.C., price 15s. nett.

Another Book of Lettering.

We cannot recommend this book of lettering. Besides the usual styles employed by architects, engineers and others, it contains twenty-two "ornamental" alphabets, the majority of which are ugly and ill-formed.

"Lettering for Architects. Engineers. &c.," compiled by John B. Thorp. The London Drawing and Tracing Office, 58, Gray's Inn Road, W.C.

Two Books on House Planning.

Mr. Batsford has just published two volumes which deal with the planning of houses, one devoted to proposed designs for suburban houses, the other illustrating a number of executed designs for country houses. In the former the author, Mr. Snell, attempts to improve upon the plans and elevations of that enormous class of English houses known as "suburban houses." It is doubtful whether the volume ought to have been published at all, for though the plans occasionally exhibit points of interest, on the whole they are essentially bad, while the elevations are as atrocious as the worst of the speculative-built houses of this class. It is, of course, next to impossible to get an ideal plan on such sites, generally enclosed on both sides, as are given to these small houses in the suburbs, and every design must be largely a compromise. They cannot have that simplicity of arrangement which betokens a masterly plan, while aspect or the placing of wall on wall and void on void cannot as a rule be considered. The problem therefore comes down to the juggling of a number of rooms together and the sacrifice of small facilities to essential needs. Cost is an ever-present governing factor. But there is not the slightest reason why angles should be cut off rooms when the extension of a back-addition by a foot or two would avoid it, as in plates II., IV., V. and VII. of Mr. Snell's book, or why walls should suddenly break back a few inches or a foot for a similar reason, as in plate III. Chimneys should always be collected where possible for reasons of economy, of money and of warmth, and the roof-plan made simple for the same reasons—points in which these plans are abundantly at fault. A matter which seems generally overlooked is that the light should come on a kitchener from the side (best from the left, as most persons are right-handed), or still better from a top-light, and there is often no logical reason in these plans why this should not be done. Another consideration of the utmost importance is that there should be unencumbered wall-space in bedrooms in a position not subject to draughts, and if possible not visible when the door is open, for the placing of the bed—another point wherein these plans are at fault, as indeed are those of the majority of architects to-day. In looking at most architects' plans for small houses we realize the reasons why the mere fact of engaging an architect immediately increases the cost; for, unlike the speculative builder, he has had no experience in the saving of every penny, and he plans in a happy-go-lucky fashion with his eyes mostly on the elevation—cutting the roof plan about, designing chimneys isolated far apart, and often adding an extra staircase, while wall does not come on wall and roofs are of large span—all meaning additional expense. It is not to be traced to the fact that an architect requires better work—this is of minor consideration; it is his unpractical methods of planning.

We turn with pleasure from the consideration of this book to that by Mr. Newton, who is a practical architect and one of our most able designers of country houses. The illustrations are excellent; we have never seen any better produced, though some of the photographs are not as good as they might be. Mr. Newton's first publication of the sort, brought out in 1890, soon went out of print, and instead of publishing a new edition of that volume he has issued this selection of country houses planned by him during the last ten years. In the former book, except for plans, the illustrations were entirely from photographs, but in this book the difficulty of obtaining them is not to be greatly regretted, for there are a number of fine perspective drawings instead. Mr. Newton is not an extremist; he says—"It would be affectation to insist nowadays on the use of local materials only, but it is, I think, legitimate to take the district into consideration. Materials foreign to the country side are often imported for no better reason than that the architect has a habit of design and an inelastic mind. We must, too, get rid of the idea that we can compel materials to assume any shape we like, in defiance of their idiosyncrasies. Our house building ought to develop naturally." Not only is Mr. Newton a remarkably able planner, but his elevations and detail work are most charming. His means are quite simple, and gain thereby effective strength. His plans are worthy of the closest study, and are often model solutions of the problems, with every general principle exactly fitted. If we have any criticism to make it is that his plans suffer, as nearly all plans by English architects do, from a somewhat haphazard grouping of rooms, and have no general scheme which makes the arrangement apparent at once, such as in the plans by the brothers Adam or in the best modern French or American plans. A point often overlooked by Mr. Newton is the provision of wall-space for the bed, as dealt with above.

"Modern Suburban Homes: A Series of 18 distinct designs for small and medium-sized houses," by C. R. Snell, M.S.A. London: B. T. Batsford, 94 High Holborn, W.C., price 7s. 6d. nett.

"A Book of Country Houses, comprising 19 examples, illustrated by 62 plates," by Ernest Newton. London: B. T. Batsford, 94, High Holborn, W.C., price 2's. nett.

SMOKE ABATEMENT.

A Proposal to Tax Chimneys.

IN the course of a paper on "Smoke Abatement" which he read before the recent Engineering Conference Mr. G. T. Beilby, A.M.I.C.E., said:—

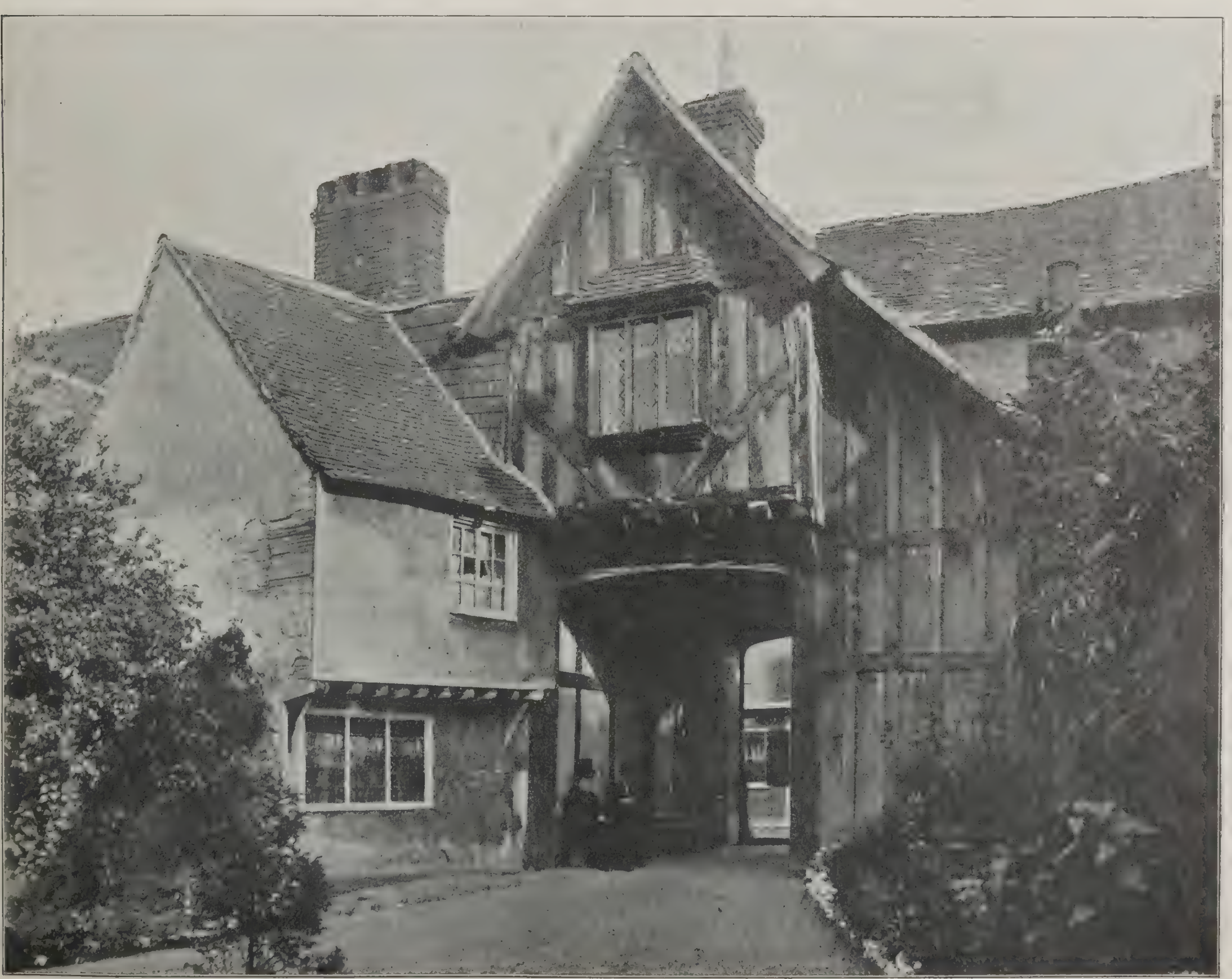
The consumption of coal in domestic fires is about thirty-six million tons per annum. This huge consumption is so completely spread over the whole nation that it may safely be said that there is not one individual in the population of forty millions who is not directly interested in it. It is this fact which makes the domestic problem in many respects harder to solve than the industrial. To the manufacturer we can hold out as an inducement to make an end of his smoke the hope of a handsome premium in the shape of savings on his bill for fuel and power; but for the householder there is no such premium. True, the saving in the cost of cleaning and re-decorating the house and the reduction in the laundry bill would represent no small amount for the average family, but at present the means whereby these desirable savings may be effected are somewhat vague and uncertain, and are supposed to involve a serious initial outlay.

If the direct inducement for the householder to abolish his smoke is insufficient to overcome his inertia and conservatism, it is clear that pressure must in some way be applied from outside. The following are three ways in which this might be done—by a great and permanent rise in the price of coal, by prosecution and fining, and by the imposition of a tax on the burning of smoke-producing fuels. As to the first, there is no likelihood that the price of coal will rise to a point which would compel the householder radically to alter the whole practice of domestic heating; it may therefore be dismissed without consideration. For the second method, that of legal conviction, there is little that is favourable to be said. One effect of the extension of this method from the industrial to the domestic department would be to direct increasing attention to all sorts of patent grates and other nostrums, and to divert it from the broad fundamental proposition, namely, that bituminous coal cannot be uniformly and systematically burned in open fires without smoke. I am well aware that there are good grates as well as bad, and that wonderful efficiency and economy can be secured by the skilful designing and setting of domestic grates, but there are two permanent conditions which make it improbable that any large measure of success will be obtained in this direction. These are the irregularity in the quality of the coal consumed and the dependence of the performance of any grate on the skill and judgment of the person who fires it. The domestic grate is at the mercy of a larger and more varied selection of incompetent stokers than any other coal-consuming appliance! We are driven, therefore, to the third means of applying the necessary pressure, namely, the imposition of a tax on the consumption of smoke-producing fuels.

I venture to suggest that a chimney tax might be so applied as to stimulate and encourage the widest and most radical improvement in domestic heating. Tax every chimney which is sufficiently wide to vent the products from the burning of raw coal, and leave free all those which are too small to do this. This would at once place a premium on the use of smokeless fuel, as gas and coke can be satisfactorily burnt with very narrow chimneys. The production of these forms of fuel would be enormously stimulated, and the devising of appliances for their combustion would be encouraged. The architect and the engineer would have a new and fruitful field for their ingenuity and skill, and their trained efforts would in a short time greatly advance our practical knowledge of the subject.

At present the 9in. chimney holds absolute sway, and a house built without its full complement of these chimneys is looked on as abnormal and outside of the ordinary practice of those who buy and sell or who lend money on house property. The builder, therefore, declines to build houses which are really adapted for smokeless firing by gas or coke, with the result that these fuels have never had a chance of showing at their best. If there is a really serious intention of dealing with the question of domestic smoke, I believe it must be somewhat on the lines here indicated.

Taking the coal output of the United Kingdom at the round figure of 220 million tons and the exports as 60 million tons, there remain for home consumption 160 million tons; of this it is estimated that 36 million tons are burned in about 8 million inhabited houses. At the rate of two working chimneys per house a tax of 1s. per chimney would yield £800,000.



ST. JOHN'S HOSPITAL CANTERBURY: THE GATEWAY FROM WITHIN

THE OLD TOWN HALL AT FORDWICH.

LONDON COUNTY COUNCIL.

At last week's meeting of the Council recommendations were agreed to in favour of application to Parliament for powers enabling sanitary authorities to require the cleansing or destruction of filthy clothing; to require owners to strip the walls and cleanse rooms infested with vermin (owners to recover the cost of the work from tenants in certain cases); to require the reconstruction or removal of urinals opening on to the street and constructed before the Public Health (London) Act, 1891; to make by-laws requiring the paving of stables with impervious material; and to require the removal of fixed dust receptacles after movable receptacles have been provided.—It was also agreed that application should be made in the next session of Parliament for power to enable the Council to spend a sum not exceeding £500 a year in scientific investigations relating to the public health—The Bridges Committee recommended:—(*a*) That the engineer be instructed to prepare the necessary plans, specifications, &c., in connection with the superstructure of new Vauxhall Bridge; that an expenditure not exceeding £250 for reproducing the drawings be sanctioned. (*b*) That a clause be inserted in the specification providing that all iron and steel materials shall be of British manufacture only. Considerable discussion arose upon these recommendations, especially in regard to the last, so that an amendment referring the matter back was carried.—The Council approved the plans (submitted on behalf of the Charing Cross and Strand Electricity Supply Corporation, Ltd.) for an electricity distributing station on the south side of Beech Street, between Braime's Buildings and Three Herring Court, E.C.—On the report of the Main Drainage Committee, in which appreciation was expressed of the satisfactory manner in which the recent heavy rainfalls had been dealt with by the authorities, Col. Rotton condemned the condition of affairs. He stated that at Wandsworth and Putney sewage to the depth of 5ft. had in many cases been left in the basements. Though the Wandsworth Board had pressed upon the Council the necessity for something to be done, their complaints had not received attention.—Mr. Burns considered that the authorities had done everything possible in the unprecedented circumstances. The fault rested really upon the heads of the landlords, who were allowed years ago to build basements to dwellings below the level of the sewers when full, and below the river at high tide. The Council had prevented that sort of thing in all new dwellings.—Sir John M'Dougall pointed out that in the case of storms and high tides there were districts in London where flooding could not be avoided. The law wanted changing, as it was a scandal that houses should be allowed to be built in low-lying districts with basements.—Mr. Cousins said the Council ought to develop intercepting sewers. At present the sewers could only carry away ½in. of rainfall in twenty-four hours. It was necessary for the Council to press on its main drainage works, about which there were constant complaints. After further discussion Col. Rotton withdrew his motion.—Mr. J. W. Benn said they had been singularly free from accidents on the electric tramway to Tooting, that being principally due to the new automatic life-guard. During the late storm the conduit had acted admirably, and the only interference with the workings was half an hour's delay in the Balham district. He regretted that the City authorities would not meet them in regard to taking the trams over Southwark Bridge.

The Building Act Amendment Bill.

The "City Press" says:—

The question of amending the London Building Act will soon come up again. The Bill of the London County Council which was withdrawn in March has, we presume, been re-drafted, as it is to be discussed at an early meeting of the Council, when we shall learn how far the objectionable features of the measure have been modified. A fortnight ago the chairman of the Streets Committee of the Corporation stated that he had asked for a copy of the Bill, and would endeavour to arrange for a conference. The mistake which led to the unsatisfactory character of the original Bill and its ultimate withdrawal has therefore been repeated, and the committee and the Council must share the blame between them. The Council have not sought the co-operation of the Corporation, and the committee have not taken any steps in the matter, although they were expected to do so. . . . The Bill was objected to because its provisions were unnecessarily drastic, and because of the excessive powers which it would have conferred upon the London County Council in connection with matters of which owners and occupiers in the City have had already an unpleasant experience. It is not that they are unwilling to make adequate provision for the protection of life in the event of an outbreak of fire; but that they are not prepared to submit to the arbitrary dictation of the officers of the Council involving unreasonable and costly structural alterations. What has been insisted on under the Factory Act supplies an unpleasant forecast of what might be expected under an Act which so largely extended the administrative powers of the London County Council as the Bill which was withdrawn proposed to do . . .

New Almshouses at Newport, Mon., were opened last Thursday. Messrs. Habershon, Fawckner & Co., of Newport, were the architects, and Messrs. Jewell & Sons the builders. The cost of the houses, which are situate on Stow Hill, has been about £2,200.

OLD HOUSES AT ELHAM.

CONTINENTAL NEWS AND OPINIONS.

[The following extracts have been translated for The Builders' Journal from the French, Russian, German and Spanish press.]

Iron in Russian Buildings.

A congress was recently held at St. Petersburg with the object of extending the application of iron in Russia. Amongst Russian architects, says the "Novoe Vremya," there appears to be a dread of the use of iron in buildings, probably because of their limited experience of it, so that they give wood the preference even where iron might be used with the greatest possible advantage. Meanwhile wood becomes dearer and its varieties more and more inferior; besides which wood is always subject to the danger of being destroyed by fungus, that curse of wooden beams and planks. The Architectural Society of St. Petersburg submitted the following questions to the congress: – (1) On the preparation of certain kinds of iron applied to the construction of doors, windows, fencings and awnings. (2) On the detailed working out of common types of building construction, *i.e.*, the production of designs for many years suited for wood but to which iron might be applied without recourse to complicated calculations not understood by everybody. The want of such patterns for the insufficiently educated in mathematical calculations can now be seen to be a serious drag on many builders, especially in the provinces. (3) On the application of iron for constructional work in places subject to earthquakes. (4) On the construction of fireproof cupboards and fireproof ceilings and floors with armed cement.

Acoustics.

There is an amusing and interesting article in "La Construction Moderne" on the subject of acoustics, arising out of the appointment of a special commission by the members of the Academie de Médecine, Paris, charged with the duty of finding out what means might be adopted to improve the acoustics of the new lecture-hall (see p. 239 of The Builders' Journal for June 3rd). The ordinary problem was sufficiently difficult, but the work was complicated, says the writer of the article, by the inconvenient habit of private conversation (in the words of one of the academicians, "it must be admitted that in our private conversations our exchange of words tends greatly to prevent our hearing the speakers"). "La Construction Moderne" suggests that one way to improve the acoustics would be to get the members to carry on their conversations outside the hall. But it appears that the academicians are not disposed to miss the pleasure of hearing themselves and the lecturer at the same time. They want a room so arranged that the words exchanged between members may be deadened so as to become no more than a whisper or gentle murmur, while the speeches from the lecture table may resound clear as a trumpet. The architect of the building was unable to solve the problem, and it was hoped that the committee would be more successful. The conclusion it arrived at is, that the noise is carried between two horizontal planes, the ceiling and the floor, the hardness of which causes reverberation and reflects the sound at the most unfortunate angle. The floor is therefore to have a carpet, cotton will be hung under the windows in the roof, and the boxes on the parterre will be closed with drapery. This is what was done at the Trocadero Hall when something "had to be done." If it were desired to take advantage of the reverberation this could only be done for the upper parts of such buildings as theatres, and then the roofs, instead of being concave or flat, would need to be convex. The tests of the committee were made with the aid of the organ, and it was found that with the walls and floors naked the sound was prolonged by nine seconds; but with the lower part of the walls covered in hair-padding and the forms covered with cushions, the duration of the sounds was reduced by two seconds. M. Sabine had made some experiments with various materials Taking the open window as the unit of complete absorption, the tests gave the following results:—

Theatre packed with audience	0·96
Hair-lining	0·76
Carpet	0·20 to 0·30
Linoleum on the floor	0·12
Floor covered with hard pine	0·061
Glass	0·027

This shows that glass is the least absorbent of all. It reflects the sound the most, and is therefore most unsuitable for the purpose; on the other hand, it is seen that the audience is the most favourable element, and that the best way to obtain satisfactory acoustics is to completely fill up the room with people, or, as M. Koning, late manager of the Gymnase, would have said, "with more than the maximum." The article makes a lengthy reference to the English authority, Mr. Ralph Nevill, F.R.I.B.A., F.S.A., and then quotes Mr. Sax, the great musical instrument manufacturer, who on being consulted by M. Garnier, the architect of the Paris Opera House, as to the composition of the material for the roof said that the materials employed for the cupola would have no influence on the reverberation of the sound. He decided to construct it of metal, and there does not appear to be any difference as compared with cupolas made with other material. It is here interesting to observe, however, that such a commission without any comprehensive terms of reference may easily effect a cure worse than the disease. After all, light is a desideratum not to be despised even in a lecture hall, and as experiments have shown glass mirrors to be the best light reflectors, a decision to abolish these in order to improve the sound might lead the members to rejoice in the improvement of their hearing whilst deploring their weakening sight. In one respect acoustics and light go hand in hand. A packed audience helps both—always provided, as to light, that black does not predominate in the dress material. The following from the German "Industriell Rundschau" will not read amiss in connection with the architect's duty to consider other things besides sound: "White walls and roof will reflect about 80 per cent. of the light that strikes them. Dark-brown tapestry will swallow up about 90 per cent. and thus reflect only 10 per cent. The objects in a room with white walls and ceiling will be three times as well illuminated as one with dark-brown walls. The following is the reflecting power of various stuffs:—Black velvet, 0·4; black cloth, 1·2; black paper, 4·5; dark blue, 6·5; dark green, 10·1; bright red, 16·2; dark yellow, 20·2; blue, 30; bright yellow, 40; bright green, 46·5; bright orange, 54·8; white, 70; and mirrors, 92·3. To properly light up a hall, the calculation should be based on one to two candles per square metre of floor-space and half a candle per cubic metre more."

To beautify St. Petersburg.

Some time ago a member of the St. Petersburg Town Council raised the question of offering prizes for the best façades of private houses in St. Petersburg. At present such a competition is being worked out by the technical department of the city council, and at the same time the council has addressed several enquiries to the president of the Municipal Council of Paris, to the Ober-Burgomeister of Vienna, to Brussels and other cites. On the reception of the replies by the council it has been decided to hold the competition.

The Hennebique System.

The invention of M. Monier employing iron as a frame to strengthen bodies of cement found many imitators, some of whom went so far as to patent their modifications of the idea. The owner of the Hennebique system in particular objected to rival imitators, and sought injunctions against two houses, Boussiron and Piketty. But in the Third Court of the Tribunal of the Seine it was judged that the governing patent was that of Monier of 1877–8, and that Hennebique's claim to seek an injunction did not lie.

Architectural Congress in Madrid.

The "Revista de Obras Publicas" says that although it had been intended to hold an International Architects' Congress in Madrid this year, an official notice has just appeared stating that it is adjourned till the year 1904. The supposed reason for the postponement is that the National Budget did not contain funds earmarked to defray the expenses, and the Minister of Instruction and Fine Arts has not the power to allocate any public money to this purpose. This will be the fifth of the series. The programme includes the following items:—(1) Modern art in architectural design, (2) the preservation and restoration of architectural monuments, (3) the character and scope of scientific studies in the general education of architects, (4) the influence of modern processes on constructional form, (5) artistic copyright in architectural work, (6) the education of workmen in the building trade, (7) the influence of legal building restrictions on private contemporary architecture, (8) the expropriation of architectural art—should architects arbitrate between masters, contractors and workmen in cases of misunderstanding amongst them? Of these subjects some are new, and others, such as 2, 5 and 7, the discussion of which was not completed at the Paris Congress of 1900, have been recommended by the Permanent International Committee. Papers may be read in French or Spanish, and may be notified till September 30th next to the executive commission at its offices in the San Fernande Academy, Alcalá 11, Madrid. The fee per member is thirty francs. Wives and relatives of members will be admitted to the various excursions, visits and entertainments that may be arranged for the members of the Congress; such persons also paying thirty francs each. A copy of the preliminary notification containing further details can be obtained from the secretary of the Royal Institute of British Architects, 9, Conduit Street, W.

Cork Slabs.

The cork slab, says "Uhland's Technische Rundschau," has come into use since 1880. It consists of a conglomeration of ground cork mixed with some mineral binding material. It smells somewhat like phenol, but this odour disappears when the brick is faced with plaster. It is only just covered, however, to serve as a preventative from vermin making their home in it. The specific weight of cork bricks differs little from cork itself, varying between 0·23 and 0·25; the weight of a cork brick of 25 × 12 × 6·5 centimetres is about 600 grammes. Cork bricks are pliable, and therefore are not very much subject to mechanical influences. They may be sawn or nailed, and will bind with lime, gypsum, mortar, &c. They are unaffected by changes of temperature, and if placed upon water they will only be soaked to the extent of some centimetres; if completely immersed, although they become soaked, their general constitution is but little disturbed. When dried in the air they show no sign of change. The cork brick is usually employed dry, and generally with an eye to its suitability for sawing, nailing, &c. But in special cases, as in ice houses, where it may be exposed to melted water, or anywhere where it may be constantly exposed to wet, it is set in melted pitch or similar material. The cork brick is a very different material from wood as regards fire. It may be carbonized by a flame, but will never burst into flame; and the effect of such carbonization is to coat the bricks with a spongy soot which renders them proof against further attacks of fire.

R.I.B.A. ANNUAL DINNER.

THE annual dinner of the Royal Institute of British Architects was held on June 23rd at the Hôtel Métropole. Mr. Aston Webb, R.A., the president, occupied the chair. The company numbered over 200 and included the American Ambassador (Mr. Choate), the Earl of Lichfield, the Bishop of London, Viscount Dillon (president of the Society of Antiquaries), Lord Redesdale, Lord Monkswell (chairman of the London County Council), the Lord Mayor (Sir Marcus Samuel), Sir Schomberg McDonell, Sir E. J. Poynter (president of the Royal Academy), Sir John Taylor, Sir Charles Scotter, Sir Norman Lockyer, Mr. Seely, M.P., Sir T. Sutherland, Sir William Richmond, Mr. Charles F. McKim (president of the American Institute of Architects—wearing the Royal Gold Medal), Sir L. Alma-Tadema, Sir W. Emerson, Sir H. Trueman Wood, Sheriff Sir T. Brooke-Hitching, Sir Henry Howorth, Sir Arthur Rücker (principal of the University of London), Alderman and Sheriff Sir G. Truscott, the Archdeacon of London, Sir H. Howse (president of the Royal College of Surgeons), Mr. Thomas Brock, Mr. G. C. Ashlin (president of the Royal Institute of Architects of Ireland), Mr. A. Buck (president of the Surveyors' Institution), Mr Walter Smith (Master of the Carpenters' Company), Mr. Edwin A. Abbey, Mr. E. A. Webb, Mr. Alexander Graham (hon. secretary) and Mr. W. J. Locke (secretary).

Following the loyal toasts was that of "The United States of America." In reply, Mr. Choate said that the proper person to have responded for the toast on that occasion was Mr. McKim, to whom, in London, the eyes of all his countrymen were turned at this moment, with thanks to him for having achieved honour, not so much for himself as for them. But if he must reply to the sentiment, he thought he knew in what spirit he ought to address that assembly, and, speaking of the United States in an architectural sense, he was bound to admit that they were still in the making. They would long continue to be entirely unfinished, and were likely to afford to the profession of architecture lucrative employment for a thousand years to come. And even at the expiration of that period there would still be many vast places to be improved, many noble structures to be erected, much utility, much skill, and much beauty to be lavished upon the buildings of the distant future. He believed that the United States still had a tariff upon works of art—not so high as it once was, but much higher than, he hoped, it would be eventually; but there was no tariff in America upon architects. They were in favour of and would put into practice the principle of the "open door"; but he was authorized by Mr. McKim to say that there was room for all. The report lately made by their distinguished gold medallist, acting under a Commission of Congress, showed that at the beginning of their Government the first President and his Secretary of State were well versed in the noble art of architecture, and that they brought to their aid knowledge acquired upon this side of the water, when a distinguished architect and engineer laid out, in magnificent proportions, the city which was to be the future capital of the United States. In recent years the attention of the Government and the architects of the country had been drawn to the fact that the original plan had not been carried out in its full perfection, and the genius of the architectural profession in America, as represented by Mr. McKim, had combined with the wisdom of Congress to bring about the restoration of the plan. Under their combined efforts, the future would show the city of Washington, with its public buildings, its magnificent avenues, its glorious parks extending through the district of Columbia, in a light that would challenge comparison with any capital in the world. For several generations America was too poor to indulge in the luxury of architecture. In early days architecture was imported, but America had always held the view that architects, like others, were people who were alive to the pursuit of business—and America had improved—and architecture had now been brought into the front rank of occupations in America. Almost every countryside was being adorned with comely, commodious and beautiful country residences. Municipalities were competing with each other as to which should have the finest buildings, and even the United States Congress was spending national funds freely in the erection of architectural court houses—and Custom houses. Let them not forget the Custom houses. The result was that although America now had many architects, it wanted a great many more.

Sir Lawrence Alma-Tadema gave the toast of "The Houses of Parliament," to which the Earl of Lichfield and Mr. Seely, M.P., responded.

"The Royal Institute of British Architects and the Allied Societies" was offered by the Bishop of London, who claimed architects as the faithful comrades of the clergy, and said that the splendid work of Wren, as seen in St. Paul's, had preached a grander sermon to the world than had ever been heard within the walls of the cathedral.

Mr. Aston Webb, in responding, said that the duty of a commission in New York to inspect any work of art that was brought into that city was an example which we might follow in this country. Referring to the question of education in architecture, he remarked that all the American universities had recognized architectural schools, through which all students passed before entering upon practical work. We were attempting something of the same sort in this country, and already day schools for architects had been started. They had been invited to prepare some scheme which would bring the existing means of education to a focus; and a committee had been appointed to deal with the matter. In conclusion he proposed the health of Mr. McKim, who gratefully acknowledged the compliment, as also the honour which, through him, had been paid by the Institute to the American nation.

In replying on the occasion of the presentation to him of the Royal Gold Medal, Mr. McKim gave a sketch of architectural developments in the United States, our report of which we were obliged to hold over last week. Mr. McKim said:—

The early buildings of the New England coast, dating back to the eighteenth century, and more rarely to the seventeenth, from the once vice-regal town of Portsmouth to Charleston, S.C., have happily descended to us despite political revolutions. Notwithstanding their simpler forms, both of construction and design, made necessary by slender means and the circumstances of transplantation, they still reflect the mother-country in their excellence of construction as well as sound and correct taste. Precisely the most interesting, and in their sphere the most admirable architectural monuments of my native land, private dwellings and public buildings alike, are those that most strongly recall their English prototypes. Our obligations, for instance, to Sir Christopher Wren are very imperfectly understood even at home, yet the cities of the Atlantic seaboard, especially in New England, abound in examples showing the influence of his school. The struggle of these landmarks for existence in the advancing tide of commercial prosperity, before which they are gradually being swept away, is a melancholy daily spectacle; not alone deplorable in the loss of historic monuments, but for the lessons they invariably teach of sound proportion, simplicity and good manners. Happily, some of the best examples remain to us. At the seat of Government, for instance, our Capitol, and the home of the President, the White House, are both singularly animated by a pure taste and devoted love of beauty, not to mention the City Hall and the old Department buildings of the city of Washington. Of these, for our information at home, as well as yours, let us gratefully acknowledge that the Capitol, though enlarged and changed since, was originally designed by one William Thornton, the White House by a certain James Hoban, while the City Hall and old Department buildings were the creation of a man of the name of Hadfield—*all Englishmen!*

I can well remember the thrill of surprise and pleasure which I experienced on my first visit to England, more than thirty years ago, in the discovery of a strange familiarity in the appearance of things, and in the sense of not being after all so far from home. Though I did not understand it then, the reason, as has been shown, was not far to seek! I will venture to refer to one more building, of the era which we call early and you ingloriously late, albeit of the period of Adam—the Octagon. Our Institute, which has urged upon Governments—national, state, and municipal—the duty of preserving historic monuments, has itself recently secured possession of one of the historic houses of America, known from its shape as the "Octagon," and designed by the same William Thornton, architect of the Capitol. Here in the early days was dispensed a liberal hospitality bv President Madison, whose home it was. Under its roof, too, the Treaty of Ghent was signed. The house was finished in a manner befitting its importance, and to-day is in excellent state of preservation. Thus the expressed desire and often recurring efforts of the Institute to secure for itself a permanent home have been accomplished after nearly half a century of existence. May it typify to those who assemble in it, as well as to the people of the city of Washington, the spirit of public service.

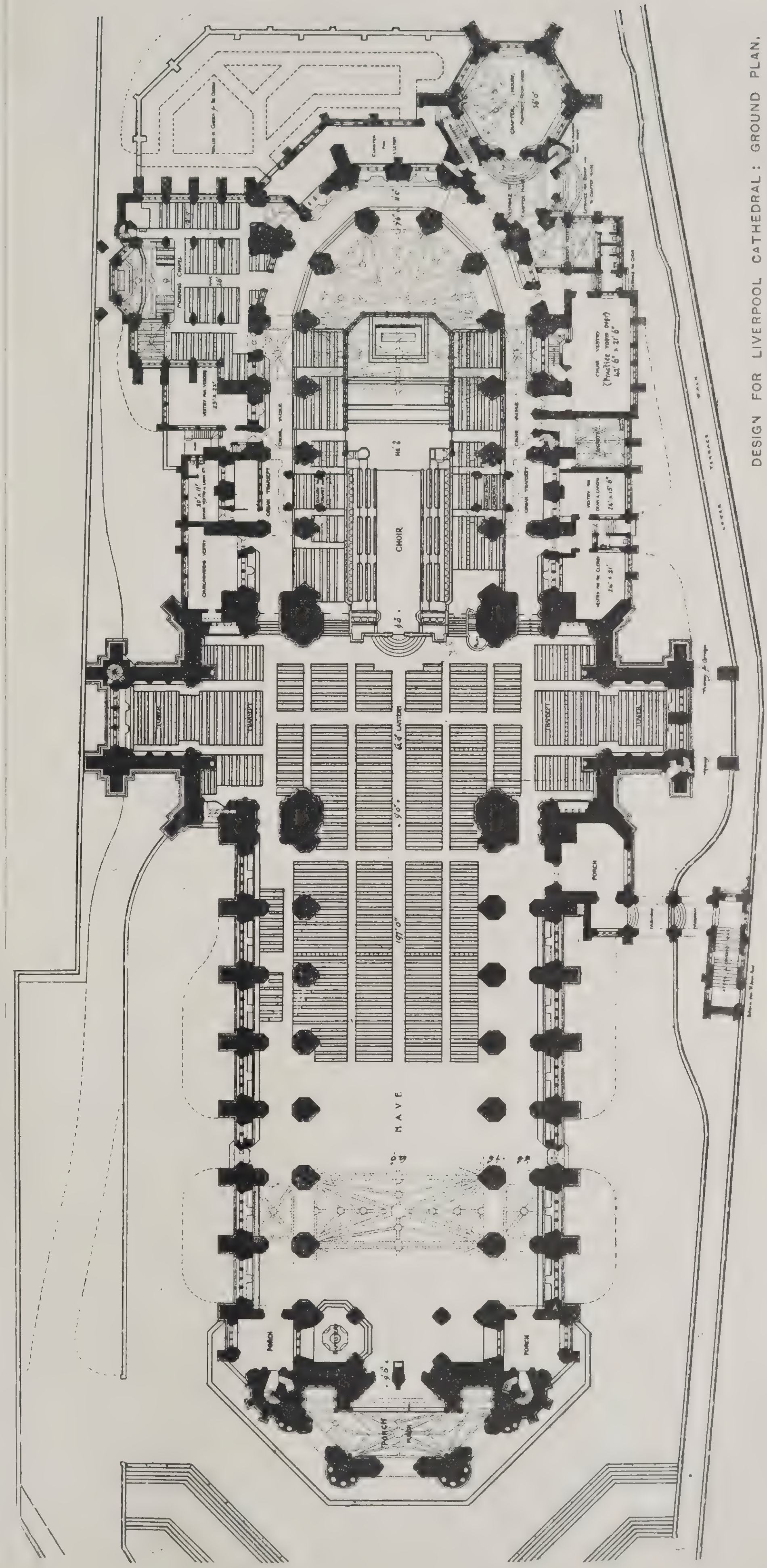
The Institute has ample reason for felicitation in both the increase and betterment of our own schools in architecture, in Harvard, Columbia, Penna, Cornell and Chicago Universities, as well as in the admirable and still older foundation of the Institute of Technology in Boston. The movement to endow an American Academy of Fine Arts in Rome on the general lines of the French Academy in the Villa Medicis is not new. Till now dependent for support upon the insufficient means at the command of the incorporators (members of the Institute), the number of scholars has of necessity been small, and the conveniences for work not such as would be afforded by an older, well-equipped and well-endowed institution. Nevertheless, in spite of its vicissitudes, such has been the quality of the work and men turned out, so strong the conviction of those most deeply interested in the need for an institution offering a post-graduate course intended only for those who shall be already technically well equipped, that a Bill for the incorporation of the American Academy in Rome by Act of Congress, and asking the protection of the United States Government, was introduced in 1901 by the late Senator McMillan. The persons named as incorporators, besides the leading architects, painters and sculptors, include the great universities and technical schools, represented by their presidents, the Secretaries of State and War, the Librarian of Congress, the Government architect and a considerable number of names of men chosen from the community at large known for their interest in art and art education. This Bill passed the Senate, and was favourably reported to the House; but owing to the legislative conditions prevailing in the latter body during the closing weeks of the session, it failed to become law. I am happy to say that it will be reintroduced in the coming fifty-eighth Congress, and is considered to have every prospect of success.

Indeed, we seem to be living in a new age, not only in our private enterprises, but in our relations with the Government. It was no small thing that a committee of the United States Senate, under the leadership of the deeply-mourned Senator McMillan, called into consultation, officially, the Institute and accepted the advice of its committee in the formation of a commission to prepare plans for the improvement of the park system of the district of Columbia, including the location of public buildings. Following this lead have come frequent requests from Government officials on the various and often perplexing problems of their departments, so that, informally and unofficially, there has come to pass a seeking for expert advice as gratifying as it has been unusual.

The forces which have brought about plans for the improvement of the national capitol are acting throughout the land. Not only in the Atlantic seaboard city of New York and the cities of the lake region like Buffalo, Cleveland and St. Paul, but even from far away Seattle, on the Pacific Coast, comes the news of attempts to treat the city as a unit and to develop a municipality as a consistent work of art. It is worthy of note also that as the star of progress takes its western way, the effort at improvement is made with increasing vigour in both enthusiasm and money. As evidence of the times, and amongst the measures voted by the last (fifty-seventh) Congress for new buildings to be erected within the district of Columbia alone, I will quote the substance of a single paragraph from the report of the Senate Commission of the District of Columbia, dated March 14th, 1903: "The fifty-seventh Congress, besides the restoration of the White House, authorized the construction of the Army War College and the Engineer School of Application; a building for the National Museum . . . . ; the Union Railroad Station; an office building for the use of the members of the House of Representatives; a municipal building for the district of Columbia, and a Hall of Records. The cost of these buildings completed will approximate not less than fifteen millions of dollars, or over three millions sterling."

I cannot close even these brief remarks without an expression of appreciation for one whom your eminent body so recently did honour. After nearly half a century of successful endeavour, during which Mr. Hunt held aloft the banner and fought the battles of the Institute, and in the fulness of his powers, at a time when his influence was greatest, he was suddenly taken away.

I have to thank you for the great patience and forbearance with which you have listened to these fragmentary remarks that but poorly express my appreciation of the great honour which you have seen fit to confer upon me.



DESIGN FOR LIVERPOOL CATHEDRAL: GROUND PLAN.
AUSTIN AND PALEY, ARCHITECTS.

Another Carnegie Library.—Mr Carnegie has given £3 000 towards a branch library on Anlaby Road, Hull.

Keystones.

Competition Reform Society.—The committee disapproves of the existing conditions in the competition for a proposed new grammar school at Newark-on-Trent because there is no professional assessor. Members are requested to abstain from competing unless they receive a further communication to the effect that the conditions have been satisfactorily revised.

A new Baptist Church and Schools at Brighton are to be erected in Gloucester Place. Messrs. Battley, Sons & Holness, 21, Old Kent Road, London, S.E., are the contractors, their contract amounting to £5,381. Accommodation will be provided for 725 adults. The architects are Messrs. George Baines, F.R.I.B.A., and R. Palmer Baines, of 5, Clement's Inn, Strand, London, W.C.

Among the Birthday Honours was that for Mr. Henry Tanner, principal architect to the Office of Works, who was appointed a Companion of the Imperial Service Order, and the same honour for Mr. F. W. Rudler, late curator of the museum of practical geology in Jermyn Street. This Order was recently instituted by his Majesty for members of the Civil Service of the Empire as a recognition of long and meritorious service.

Clifford's Inn.—At last Thursday's meeting of the Court of Common Council a report was brought up with reference to the preservation of the garden and old buildings of Clifford's Inn. The report stated that in view of the fact that the committee were unable to charge the consolidated rate with any expenses in the matter, they had not gone into the merits of the question; the Court, however, directed the committee to do so.

An Open-air Theatre for Messrs. Lever Brothers, Ltd., Sunlight Soap Works, was inaugurated on June 13th. The permanent building, containing stage, dressing-rooms, &c., and auditorium—which will accommodate about 3,000 people—is enclosed by a steel and iron frame, which was supplied by Messrs. E. F. Blakeley & Co., Vauxhall Ironworks, Liverpool, from designs of Messrs. Grayson & Ould, architects, Liverpool. This is on classical lines, and is altogether unique as regards this country.

A new Scottish Episcopal Church at Bieldside is being erected from designs by Mr. Arthur Clyne, architect, of Aberdeen. The church is in Early Gothic style, with Scottish features, and is built of Rubislaw granite and Hill o' Fare granite. The contractors were:—Mason work, Mr. Frank Morrison, of Culter; carpenter and joiner work, Messrs. Hendry & Keith; plumber work, Messrs. J. Blaikie & Sons; slater work, Messrs. Merson & Stewart; plasterer work, Mr. A. Stephen; painter and glazier work, Mr. Edward Copland; heating work, Mr. R. Tindall; electric lighting, Messrs. Claud Hamilton, Ltd., rest of Aberdeen.

The National Bank of Scotland has erected a new branch at Glasgow at the corner of Glassford Street and Trongate. The elevation is treated with horizontal bands of masonry, each angle being marked by corner turrets with a lofty dormer window between, and the whole crowned with a steep pyramidal roof. The stone has all been obtained from Plean Quarry. Messrs. A. Muir & Son, of Nithsdale Drive, Glasgow, were the builders. The sculpture was executed by Mr. Birnie Rhind, A.R.S.A., the electric elevator by the Otis Company, the steelwork by Messrs. P. & R. Fleming, the safes by Messrs. Chatwood & Co., and the floors by Mr. Stoffert. The electric installation is by Messrs. W. Bryden & Son, and the heating by Messrs. Meckenzie & Moncur. The architect is Mr. Thomas P. Marwick, of York Place, Edinburgh.

Change of Address.—Messrs. W. H. Allaway & Sons, brick merchants, owing to the demolition of No. 31, Nicholas Lane, E.C., have removed to 5, Crooked Lane, King William Street, London, E.C.

Rebuilding the Campanile.—Commendatore Beltrami, the architect and engineer, has commenced work on the rebuilding of St. Mark's Campanile at Venice. For the complete reconstruction, not taking mishaps into account, five or six years are needed. The inside will be just as before, with a space in the centre, however, in which a lift can be put.

Glasgow East-End Industrial Exhibition.—Mr. John Fairweather, A.R.I.B.A., of 136, Wellington Street, Glasgow, has been appointed architect to this exhibition, which will be opened next December. Four competitive designs were submitted to the exhibition council, Mr. Fairweather's being chosen. Much resource was shown in the adaptation of the present buildings and grounds, and in the treatment of the entrance façade and concert hall. The last is designed to accommodate 3,500 persons; the platform will have a fine orchestral organ. The exhibition is being promoted for the benefit of the reconstruction scheme of the Glasgow Royal Infirmary.

Manchester Society of Architects.—On the evening of June 16th thirty members visited the new St. Mary's Hospital, Manchester, of which Messrs. A. Waterhouse & Son are the architects, and were shown with the greatest thoroughness the admirable fittings and arrangements of this excellent modern hospital. On Saturday, June 20th, thirteen members visited Liverpool. Messrs. Norman Shaw & Doyle's White Star Line Offices and Parr's Bank (by Mr. Norman Shaw and Messrs. Willink & Thicknesse) were very much admired, and the excellent design and detail inside and out carefully examined. A visit was also paid to Mr. Mountford's new technical school buildings, where Mr. Willink, chairman of the Committee, with some of the staff, explained the buildings fully, giving special attention to the plenum ventilating system; Mr. Willink also most hospitably entertained the party. A visit to the new Central Fire Station concluded the afternoon.

Obituary.

Mr. Bruce Price, one of the most noted of American architects, died recently in Paris. He was of pure American descent both on the father's and mother's side—from the earliest colonists of Maryland. He was born in Cumberland, Md., in 1845, and studied architecture under the late Mr. Niernsée, of Baltimore. In 1869 be began independent practice as a member of the firm of Baldwin & Price. This partnership continued only four years, and, except a temporary connection with Mr. Freeman, he never formed any partnership until just before his death. It is not impossible that this circumstance contributed to the individuality by which his buildings were distinguished, and which soon brought him into note. Among the earliest of his works were the club-house and other structures at Tuxedo Park, executed for the late Pierre Lorillard; and he afterwards designed many houses in the Tuxedo settlement for various owners. For Yale University he built Osborn Hall, and the Welsh Dormitory, and carried out various important commissions in Canada, among them being the station of the Canadian Pacific Raiload in Montreal and the beautiful Château Frontenac in Quebec. Besides these buildings he designed a great number of churches and private houses both in city and country, while his American Surety Building is still one of the best, if not the very best, of the "high buildings" on Broadway.

Builders' Notes.

A Union prevents a Strike.—The Glouceste District Committee of the Dockers' Unio have refused to grant permission to th builders' labourers to come out on strik owing to the Master Builders' Associatio refusing to concede the $\frac{1}{2}$d. per hour advanc asked for by them or submit the matter t arbitration.

New "Tubes."—The City and Sout London Railway Bill came before the Ear of Belmore's Committee in the House o Lords last Wednesday. The proposals ar to extend the line from the Angel station t Euston, and also to make a new "tube" fron Brixton to the City. The promoters proposed to give an access to Euston, King' Cross and St. Pancras stations by surfac subways. There would also be a subway a Euston with the Charing Cross, Euston an Hampstead railway, so that a connectio would be practically secured with the whol of north-west London.

Messrs. Waygood & Otis, Ltd., declare a dividend of 9 per cent. for the year on the ordinary shares, carrying forward £4,949 During the past year they have carried ou some very important contracts, including lift for Marlborough House (the Prince of Wales) the Houses of Parliament, the Colonia Office and the Shepherd's Bush Station o the Central London Railway. Several larg blocks of City offices have also been fitte up in the same way. Moreover, they have manufactured many of the huge cranes a present on the river. The business of the Otis Elevator Co. has been largely conducte as a distinct department of the company's operations. The directors, however, are o opinion that it is desirable to emphasize still further the distinction between the two types of lift, and thus reap the full benefit of the Otis connection. While the Waygood electric lift, like the Otis, has been brought to a very high standard of efficiency, each possesses special advantages. Certain clients prefer the Waygood type and others the Otis, and consequently the board are desirous of arranging to meet both demands, instead of merging the two types into one.

The Building By-Laws Reform Association, of which the Duke of Westminster is president, has been formed to secure that official control of private buildings shall not extend beyond the demands of public health and safety. That some such organization is needed is obvious from the fact that it is practically impossible for individuals to successfully resist unreasonable encroachments on their liberty. The Association recognizes the necessity for building regulations in places where the interests of public health and safety demand them, but in many districts the existing by-laws and regulations go far beyond this need, and the interference with individual liberty has become intolerable. The Local Government Board, recognizing this, has issued a new set of model by-laws for rural districts, which, with due regard to health and safety, omit some of the objectionable clauses which have hitherto been included. As a first step the Association will turn its attention to the work of getting the old unreasonable by-laws amended, particularly in rural districts, where the hardship is greatest. It is important to point out that these oppressive by-laws have had, and are having, an injurious influence upon the provision of dwellings for the working classes. The amendment of by-laws in urban districts will also have the attention of the Association, in order to secure that more reasonable measures shall gradually be introduced. The hon. secretary and treasurer of the Association is Mr. R. A. Read (45, Parliament Street, Westminster).

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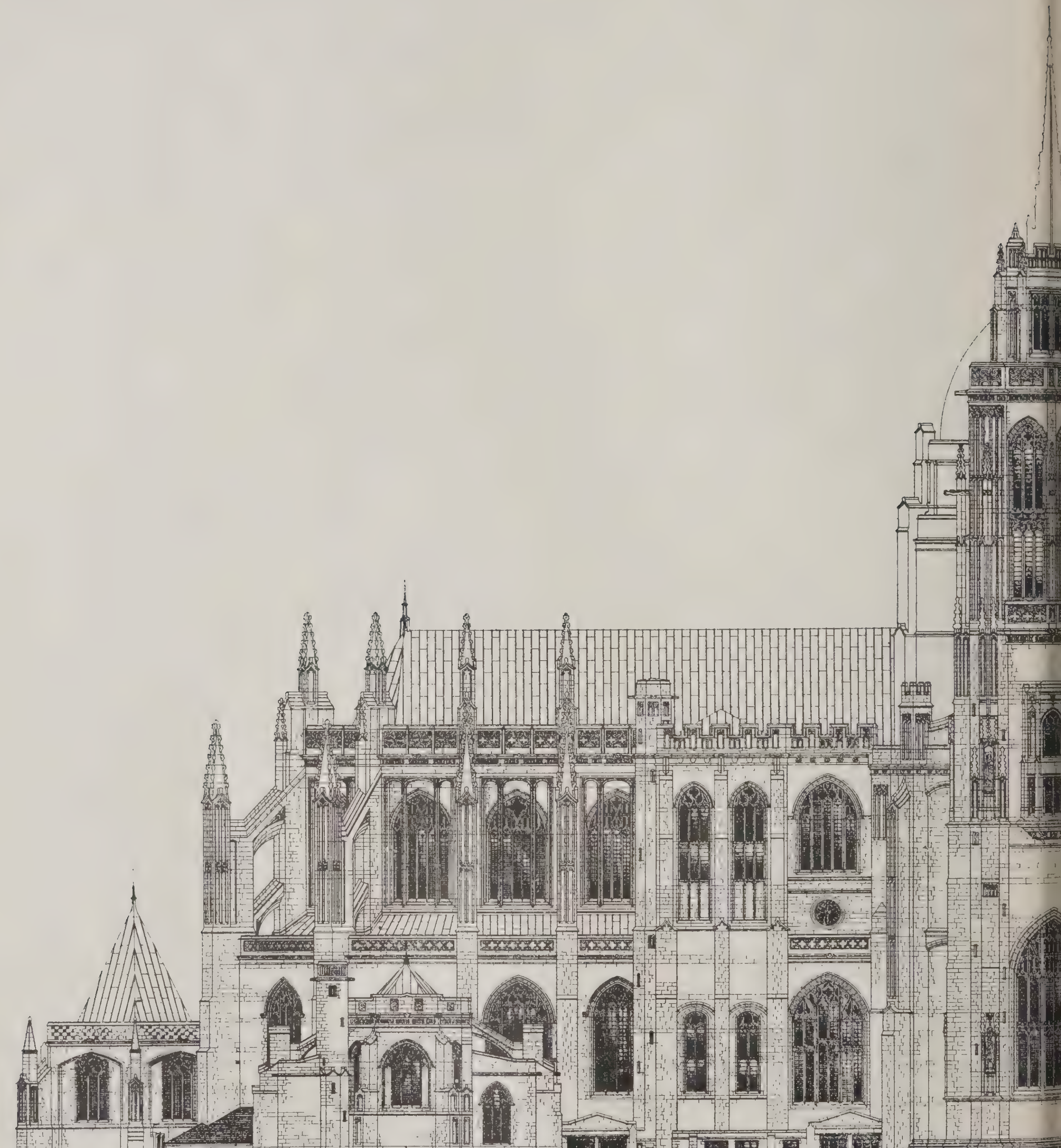
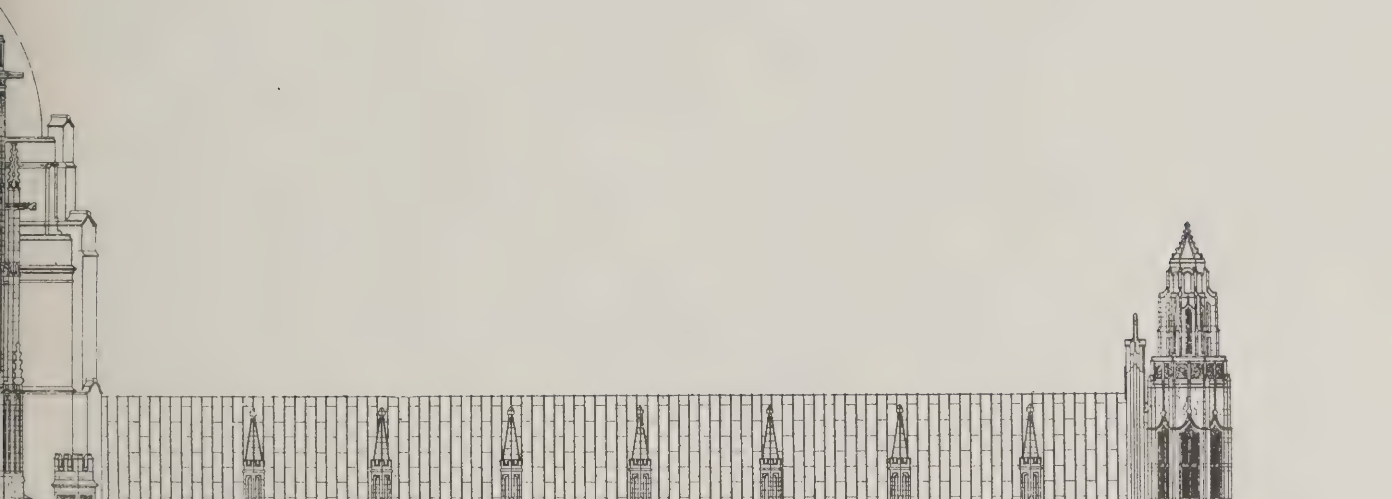
Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, July 1st, 1903.



DESIGN FOR LIVERPOOL CATHEDRAL BY AUST



LEY: ELEVATION TO ST. JAMES'S CEMETERY.

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Supplement to
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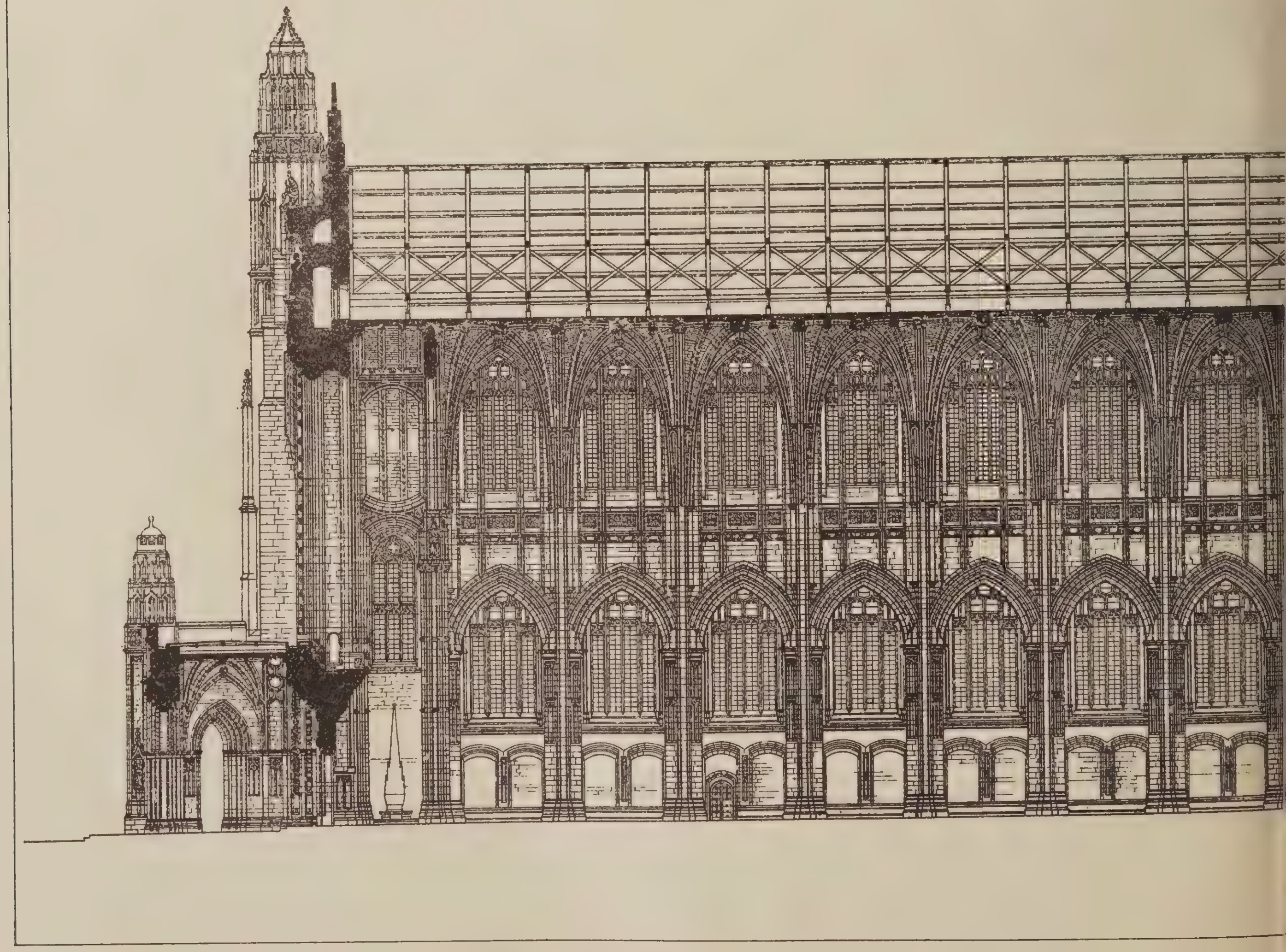
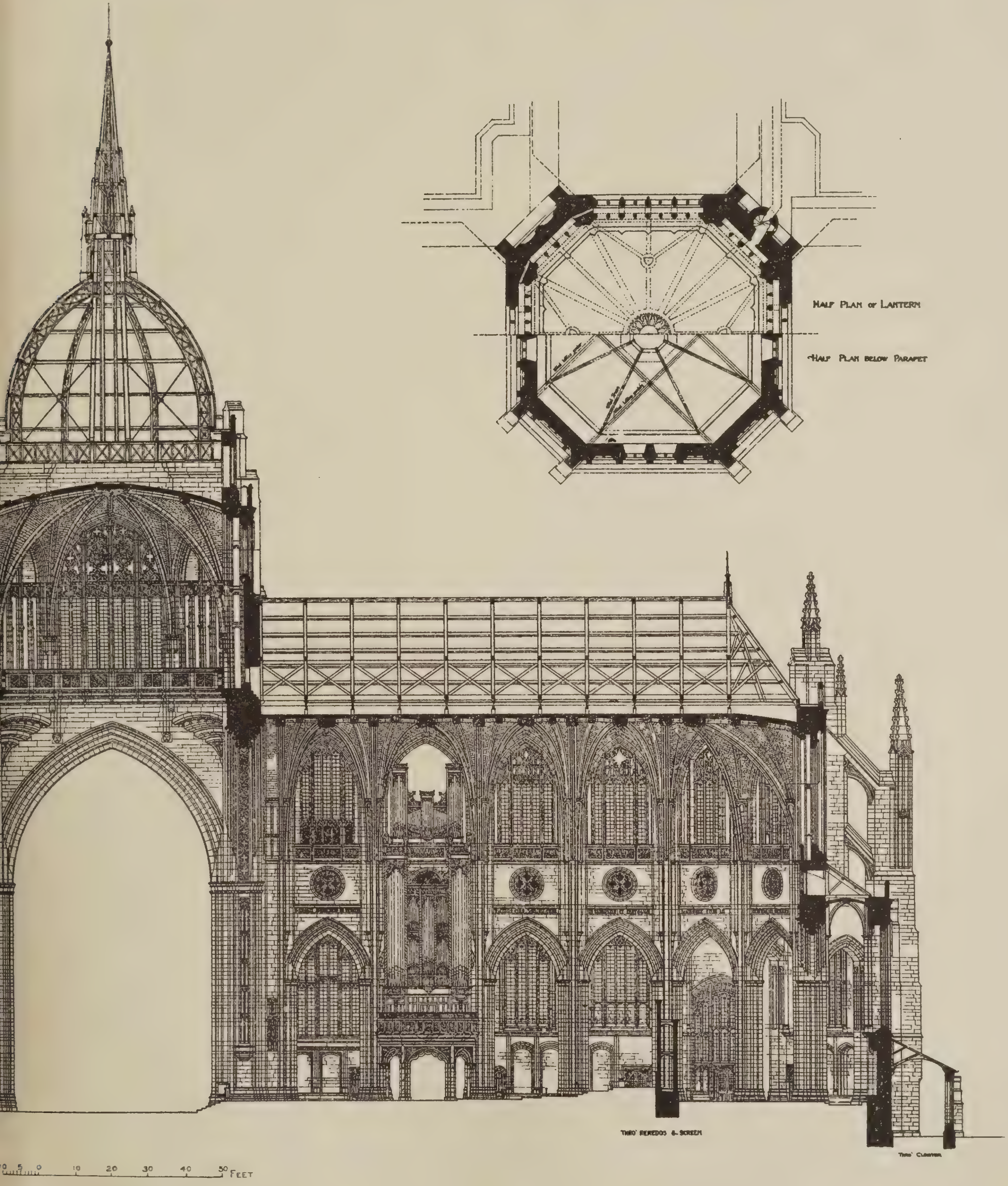
Wednesday, July 1st, 1903.



DESIGN FOR LIVERPOOL CATHEDRAL



"PHOTO-LITHO." R. J. EVERETT & SONS, 56 LUDGATE HILL, E.C.

STIN AND PALEY: LONGITUDINAL SECTION.

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Bricks and Mortar.

phorism for the Week.

He that buildeth his house with other men's oney is like one that gathereth himself stones the tomb of his burial.—Ecclesiasticus i. 8.

ur Plates. The main features of Messrs. Austin & Paley's design for verpool Cathedral are a nave, choir and ansepts, all 62ft. wide exclusive of aisles. ie transepts are short, being 33ft. long, and wers about 38ft. square open into the ends. was thought that western towers would tract from the length of the cathedral as en from the west, which has an important proach. Exclusive of the west porch, the thedral is about 450ft. long and 102ft. gh to the nave groining, the choir being . 6in. higher. The central lantern arches e 54ft. wide in the clear, which is about . more than those under the dome of orence Cathedral, though much less than at a. Sophia. The walls are 9ft. thick. The eight on the lantern piers at the base would about 24 tons per ft., and on the nave ers 20 tons. The nave and choir columns e 35ft. high, and the height to the ridge of e nave roof is 139ft. and to the cross on e dome 304ft., the towers being 240ft. high om the floor-line. The choir, being of usual width, allows the stalls to be placed ite within its space and 11ft. from each le wall, with a surrounding low screen and tes instead of the usual high screen. With gard to the 3,000 worshippers to be seated, essrs. Austin & Paley say: "It appears at the area taken up by each chair, inding its proportion of passage-room, is . super. On this basis the 102ft. sq. under e dome of St. Paul's Cathedral would seat oo persons, and at a distance of 155ft. om the pulpit, including the nave and ansepts to this extent, but exclusive of the oir (which is not commanded by the lpit), 2,250 persons can be seated in St. ul's. In this plan for Liverpool Cathedral, the same distance of 155ft. from the eacher, 2,500 persons can be seated under e lantern, in transepts and towers, and in e portion of nave as shown, with an additinal 500 in the choir and its inner aisles, this space would be commanded by the lpit; making in all 3,000 convenient tings, with no pillar obstructing, within 5ft. of the pulpit, and with ample passage ace. Of these, 2,700 would be within oft. of the pulpit." The organ is placed galleries on each side of the choir and ntinued into large organ transepts with ty arches and with extra openings for nd on their western sides. The roof and me would be largely constructed of steel, dome and its flêche being covered with oper. Yellow and pink freestone from rley Dale, and possibly flecked Runcorn, re proposed for the interior.

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he Stratford Cottages. A report on the proposed site for the free library in Henley Street, Stratford-onon, has been presented to the Committee the Society for the Protection of Ancient ildings by the secretary, Mr. Thackeray rner, and Mr. Oliver Baker, one of the nmittee, who, after describing the old ises known as the china shop, which it is posed to utilize for the purpose of the rary, say: "We consider that the old ises are well worthy of careful preservan from their intrinsic interest of age, and t undoubtedly such buildings would be re likely to be permanently preserved if ularly used and occupied, which seems to ve been only partially the case for some rs. It is certain, however, if the houses no longer be retained for their original domestic use, that in adapting them to the purpose of a library the modern brick front must be so extensively altered that its present character would cease to exist. Moreover it is not structurally in a sound condition, and it cannot be, because the houses being of timber and the front of brick there is no satisfactory bond between them. This brings us to the conclusion that if the buildings are to be used for a library a new front must be erected, and we consider that the whole of the ancient work which remains can be, and ought to be, retained unaltered literally; and to do this it is desirable, if not essential, that the new front should be constructed of timber. . . In order to retain all the old work the upper storey of one house must necessarily overhang the lower, and its baseline cease to coincide with that of the adjoining one . . ."

The Great Theatre Architect. A marble monument to Charles Garnier, the architect of the Grand Opera House, Paris, has just been unveiled. The monument is placed in an outer angle of the Opera House, and is, as it were, a signature upon the building. Upon the pedestal is traced a plan of the Opéra. This is surmounted by the bust of the great architect, flanked by figures in bronze symbolical of Fame and the Graphic Arts. At the inaugural ceremony, which was performed by M. Chaumié, Minister of Public Instruction, due emphasis was laid on the talent of Charles Garnier, which enabled him, a young and obscure architect, easily to carry off the prize in the competition for the Opéra against older and already famous competitors. Charles Garnier was the son of a blacksmith. He was born in Paris in 1825, and at an early age showed an aptitude for drawing. After studying at a decorative school he became the apprentice of a fairly well known architect, but stayed only a short time, as his chief duties consisted of putting wine into bottles and rolling cigarettes. He then took a few lessons from Léveil, and at the age of seventeen entered the Beaux-Arts School. He was twice a candidate for the Grand Prix de Rome, and was accepted on the second application. It was during his stay at the Villa Médicis that he became acquainted with E. About, and that he did so much work for the De Luynes family. In 1826 Garnier was named architect for two arrondissements of the city of Paris, and in that same year was one of the 160 men who applied for the order to construct the Grand Opera House, among whom, it must be stated, were the most famous architects of the day. Exactly one month was allowed for the submitting of the drawings, and, strange to say, Garnier's was the last presented. The Opera House was commenced the following year, but was not completed until 1875. During the whole time of the construction Garnier lived in a small wooden house, from which he could survey the work and where he was constantly visited by friends and by distinguished personages. One day the Empress Eugénie, evidently wishing to express her approval in technical terms, said: "Les anciens ne redoublaient pas leurs points d'appui"; to which Garnier replied, "Madame, ils n'allaient pas non plus en chemin-de-fer." After the Franco-Prussian war Garnier was in despair, for he thought that his work would never be finished, as the Government was so slow in supplying the necessary funds. However, when the old Opera House was burned to the ground the new building became indispensable. It cost £1,520,000, although in 1860 it was estimated that it would only cost £320,000 and the French Government would never own that they had spent more than £600,000. In 1867 Garnier was made an honorary member of the Royal Institute of British Architects, and in 1875, when the Opera House was inaugurated, he became Grand Officer of the Legion of Honour. Besides the Grand Opera House, the most important buildings with which he was connected were the Casino at Monte Carlo and the villas he constructed for himself and his old friend Sarcey. He died in 1898 from a nervous malady, and in great poverty, having all through his life been too generous; he was often seen to give his own personal money to his employees in order to encourage them to execute the work with more promptitude.

Excavations in Palestine. The annual general meeting of the Palestine Exploration Fund was held at the Royal Institution last week. The annual report stated that the principal work of the Fund during 1902 was the partial excavation of Gezer. Mr. Macalister was actively employed there for five months only. The result of the excavations, thus far, had been to show that there are at Gezer seven strata of remains, which carry back the history of the site to the remotest antiquity. In some instances the objects found indicate a continuous history, whilst in others they as clearly show that the continuity has been interrupted either by the advent of a new race or by some event of which the nature is not clearly known. The two lowest strata belong to a period (the Neolithic age) when men used no metal and lived in caves, or in houses built of mud brick. The people were of slight build, and were not Semites. A few rudely-formed idols in stone have been found. The two next strata supply evidence of the occupation of the site by Semites, who were stronger and larger boned than their predecessors, and were more advanced in the scale of civilization. They lived in houses with rude walls of mud and stone, and protected them with strong well-built walls of stone. The bronze weapons of this period have been found buried with bodies. A large number of objects of the most varied kind was found in the two strata; part of an inscribed statue, scarabs and impressions of scarab seals of the Egyptian Middle Empire (about B.C. 2500–1500); flint and bronze implements and weapons, fragments of pottery, and broken idols in stone and clay. The most interesting discovery in connection with these strata is that of a "High Place," which, as far as it has been excavated, consists of a row of eight monoliths standing upright on a stone platform within a walled enclosure open to the air. The fifth stratum from the bottom supplies evidence of a break in the continuity of the occupation, which apparently coincides with the immigration of the Israelites. Iron appears for the first time. The open area of the "High Place" is encroached upon by dwelling-houses, and the *débris* is characterized by those lamp and bowl deposits under the foundations of buildings which Mr. Macalister suggests may be connected with some ceremonial custom peculiar to the Hebrews. The next stratum in ascending order may with certainty be assigned to the period of the Jewish monarchy. The lamp and bowl deposits continue, and the size of the city is reduced. There is evidence that the "High Place" retained much of its sanctity during the greater portion of the periods represented by the fifth and sixth strata. The seventh stratum marks a complete interruption in the history. Flint implements and the lamp and bowl deposits disappear; iron is in common use; the bronze objects are only ornamental; and there is no trace of worship at the "High Place." The masonry of the houses and the pottery types are similar to those found at Tell Sandahannah, in the Seleucid or Ptolemaic town of Marisa; and an Egyptian inscription of the fourth century B.C. was found in the *débris*.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Safe Load on Concrete Columns.

London, E.C.—H. S. writes: "What would be a safe load on solid concrete columns (composed of broken brick and cement) 13ft. high and of 14in. average diameter?"

If composed of 1 part of good Portland cement, 4 of hard-burnt brick, and 1 of clean sand, a safe load would be 10 tons, though concrete columns of the size stated ought to sustain 40 tons before they failed.

Removing Varnish on Oak.

Otley.—A. M. writes: "Referring to the enquiry on p. 289 of your issue for last week, I have always found Egyptian clay paint-remover the best for removing paint or varnish on oak. It is manufactured by the European Chemical Manufacturing Co., of 53, Kirkstall Road, Leeds."

A Sketching Tour in England or France.

Newcastle-on-Tyne.—North writes: "I am going to spend six or seven weeks on a sketching tour, and had thought of passing some of the time in France. Do you think that this is advisable, or would it be better to spend the whole of the time in England? If you think that the former would not be wasting time, please advise me as to where to go."

We think you will do better by studying work in this country first and in other countries afterwards. With these sketching tours there is a great deal of unprofitableness; not because they must of necessity be so, but for the reason that architectural students—and architects too, for that matter—are prone to think the proper way to spend their time is in making more or less elaborate sketches in pencil and colour of tumble-down houses in some remote spot, taking very little trouble to determine the construction they are dealing with or to analyse the composition which may be so delightful to the eye, but rather straining after picture-making and prettiness. Anyone who has the ability and the love of making sketches of old architecture can spend many pleasant hours in this way, and we have nothing to say against the practice if the student is merely passing his time languidly and not bothering to search out any architectural essentials. But the thing is greatly overdone. Students go over to Normandy, and to Belgium and the Rhine, filling their sketch-books with scraps of outline and colour, not taking or even gauging dimensions, in the belief that they are deriving great benefit from it. Doubtless much may be learnt unconsciously in this way; but it is not the kind of learning which these same students find of particular use when they get back to their drawing-boards and have to face the problems of house planning or in contriving the elevation of some drill-hall, shop premises or public house. For these reasons we are surprised that not more attention is given to the vital modern work, both in towns in this country and in cities like Paris, Berlin and Vienna. We repeat that the haphazard study of old houses on the Continent is overdone—we have seen too many fragments of Normandy steeples, Rouen porches and Dinan chimneys, more especially as the students who give their attention to them have probably never properly studied the delightful old houses and other buildings spread over the face of their own land. So that we would advise our correspondent to defer his Continental trip if he seeks most to benefit himself instead of passing the time pleasantly with a book of sketches, and to confine himself to this country, where he may go to whatever part is most to his liking.

Buildings to Measure near Birmingham, Sherborne, Seaton, the Cotswolds and Godalming.

Birmingham.—Subscriber writes: "Please name some buildings within 8 miles of Birmingham suitable to measure (churches preferred)."

The district around Birmingham does not appear to be rich in ancient churches, especially within the prescribed limit of 8 miles. There are, however, two churches which seem well suited for your purpose, namely, Tamworth Church and Temple Basall. Tamworth Church is of the Decorated style throughout, but is unfortunately much mutilated and defaced. Temple Basall belongs to the early fourteenth century. This truly elegant specimen of Early Decorated style of architecture was formerly the church belonging to the preceptory of the Knight Templars at the manor of Basall. After the suppression of the order (Ed. II., 1312) the church was suffered to fall into a state of dilapidation, and it so remained until the year 1677, when it was restored. The roof, gable terminations and the upper part of the tower were probably rebuilt at this period, and the rather unusual arrangement of the latter constitutes one of the most interesting features in the building. The south doorway is now blocked up. It was covered originally by a stone porch, of which the springer of the groined roof still remains. The windows generally throughout the church are of extraordinary beauty, and only two are similar in design. The east window is a magnificent opening of five lights, and offers some little peculiarity in the construction of the tracery. At the west end there are two windows, the larger one of five lights, but considerably smaller than that in the chancel, and above in the gable is an excellent wheel window. The two most easterly windows on the north side are lighter than the others, and therefore probably a difference in level helped to indicate the distinction between the chancel and the nave. On the south side the most westerly window in the chancel is lychnoscopic (*i.e.*, a low side window), and the other is rather stilted to make room for the piscina and sedilia. The latter, of three seats, is richly wrought with mouldings of most exquisite design. The plan is almost rectangular, being 93ft. long and 30ft. 1in. wide. There are also three halls well worth visiting in the neighbourhood of Birmingham. "The Oaks," West Bromwich, is one of the finest and most interesting half-timbered houses in England. It is considered to have been built in the latter part of the reign of Henry VIII. Cladmore Hall, now an inn called "The White Heart," was also built in the reign of Henry VIII. Oakeswell Hall, Wednesbury, is also a building of about the same period. M.

London, S.E.—R. G. N. writes: "(1) I wish to sit for the examination for an A.R.I.B.A. Can I take the Intermediate and Final, or is it essential to sit for the Preliminary as well? (2) Kindly name some building to measure within easy distance of Sherborne, Dorset, and Seaton, Devon."

(1) You must pass the Preliminary examination of the R.I.B.A. before you are admitted to the Intermediate and Final, unless you can obtain an exemption. If you write to the secretary (9, Conduit Street, W.) you can obtain particulars as to the conditions under which exemption from the Preliminary examination is granted. There is a Special Examination to qualify for candidature as Associate R.I.B.A. open to architects in practice not less than twenty-five years of age, and to chief assistants over thirty years of age. For this examination it is not necessary to have passed the Preliminary or Intermediate, and testimonies of study are not required. (2) Sherborne has an abbey church with a magnificent interior. While in this town you should not miss seeing the little chapel of the almshouses with its Flemish triptych and its old glass. There is also an old castle at Sherborne. The little village of Trent has a church which boasts of its extraordinary display of old carved woodwork. It is also notable for its painted glass. Yeovil has a church with a remarkable crypt below the chancel groined from a central shaft. Sandford Orcas, Marston, Rimpton, Montacute, Brampton-D'everoy, Hampton, Langport, Huis-Episcopi and Muchelney have churches of some importance. Montacute possesses the famous Montacute house and a priory of much interest to the student of architecture. The whole district is full of the most charming and varied domestic work.

G. A. T. M.

Scarborough.—F. J. writes: "I and some fellow architects' assistants wish to spend a week or ten days' sketching in the Cotswolds country. We thought of commencing after leaving Gloucester and cycling to Burford, taking in any points of interest *en route.* Kindly suggest a few buildings worthy of study."

The district you have chosen for your sketching tour is so delightfully rich in buildings, domestic and ecclesiastic, that it does not much matter what route you take. If you purchase the R.I.B.A. Journal, Third Series, Vol. X., No. 9, you will find all the information you require in the "Pugin Tour," 1902 (price 1s.). G. A. T. M.

Farncombe.—W. W. J. C. writes: "Could you suggest a building within twelve miles of Godalming suitable to measure for the R.I.B.A. testimonies of study? Is Shere Church a good example?"

The following buildings at Guildford will suit your purpose:—Trinity Church, for the most part of the Perpendicular style; the Town Hall, which is Renaissance; Abbot's almshouses: Clandon Church is also well worth studying. Shere Church leaves little to be desired for the purpose of preparing R.I.B.A. testimonies. The south door is Norman with chevron mouldings; the rest of the church is for the most part Decorated. There is a good Early English font. M.

Newly-plastered Walls.

London, W.—T. H. G. writes: "I have some new walls newly plastered, which must be treated in some way almost immediately so as to make them cheerful and fit for habitation. Can you tell me of a good, cheap and efficient method of treating them temporarily until the plaster is in a sufficiently dead condition to receive ordinary wallpaper?"

We advise you to use the ordinary tar-coated lining-, "Willesden" or "P. & B." papers.

Charge for Laying-out Gardens.

Arbour writes: "(1) Do architects or garden architects make any recognized charge per cent. for their services in connection with the laying-out of gardens? (2) What would be a fair charge to make for designing and superintending the laying-out of a garden of about 2 acres around a house? The garden work has gone on under my superintendence for the past seven or eight months contemporaneously with the house. The cost will be about £450, including the gravel and stocking, but exclusive of the terrace wall and steps and the dipping tank. Should the latter items, which were carried out by the builder, be charged in with the house and covered by the usual 5 per cent. commission?"

(1) No. The charge is usually made

according to the status of the architect or designer and the time occupied. (2) Charge in the wall and tank with the house at 5 per cent. commission. A fair charge for the garden work would, we think, be 30 guineas, unless there was any very elaborate work.

Hair in Wall Plastering.

LONDON, N.—W. V. writes: "What is the ordinary London practice as to internal plastering on new walls where the plastering mortar or 'rough stuff' is of stone lime and sand? It is admitted that hair should be added in the case of ceilings to hold up the plastering mortar whilst it sets, but it is contended that this is not necessary nor usual for walls."

Hair is used to keep the plaster from falling off an overhanging surface, such as a ceiling, by giving it tensile strength while it is yet wet. It is not in the least necessary for walls, because the work is done from the bottom upwards and support is given vertically, friction and adhesion being sufficient to prevent the plaster falling away from the wall.

Student Articled in his Father's Office.

BRADFORD.—KEYSTONE writes: "In the case of a son being articled to his father to learn the profession of an architect, what form of articles of pupilage would be the more suitable, seeing that the usual form as approved by the R.I.B.A. hardly seems to apply to this case. Would not the ordinary form of apprenticeship as issued by the Inland Revenue Office be more suitable, with the words 'profession of an architect' added?"

The Inland Revenue form would be recognized. It would be easy to compile a form from the comparison of the two forms you mention.

University Theatres.

LEEDS.—H. Y. writes: "Where is the best planned university theatre to be seen?"

Plans of the new University for Birmingham, designed by Mr. Aston Webb, R.A., were published recently in the "Building News," and the selected design for Cape Town University was published in THE BUILDERS' JOURNAL for May 27th last, and the second- and third-premiated designs in last week's issue. All these contain lecture-theatres or halls suitable for examinations, and are as good examples as could easily be found. G. A. T. M.

Building on Common Land.

HARPENDEN.—A. H. S. writes: "A certain piece of common field land, chiefly freehold, is held by various owners, who hold equal sporting and certain other rights over it—but the public have no common rights. It is now desired to enclose the land for building purposes. What should be done to accomplish this, so as to abolish all common rights? Must the approval of the Board of Agriculture be obtained, or would a deed properly executed by all owners be sufficient?"

Your question is a difficult one for a layman to answer, and I can only do so in general terms. Such a "tenancy in common" as you describe, though not impossible, is of very rare character, and one wonders how it can have arisen; the word "common" usually presupposes the existence of a lord of the manor and of rights of a quasi-public character. With regard to your proposal that the land should be enclosed and divided upon the basis of mutual arrangement and the execution of one deed, and presuming the facts are upon examination found to be exactly as you describe them, I see difficulties by reason:—(1) That all the tenure is not freehold, and that possibly therefore some are only "limited owners": (2) that it is hardly likely that all the owners are legally in a position to bind their successors, either because of their tenure, minority, lunacy or otherwise; (3) that they will all voluntarily agree to the final terms of partition (even if all are so able to bind their successors). I would suggest that in the first place all the owners should agree to the broad proposition "that the land be divided in accordance with the proportional interest of each," and should formally instruct one solicitor to act on behalf of them all. He will then be able to advise as to the possibility of such a deed as you suggest, or as to the necessity for an application to the Board of Agriculture and procedure under the Inclosure Acts. The essential point, of course, is that a partition such as is desired must be so carried out as to be binding for all time not only upon the parties and their successors, but must also be good in law against the public. A perusal of the Inclosure Act of 1845 (which was the first Act of general application) will give you a good idea of the difficulties attending any private arrangement for the division of land enjoyed under "tenancy of common." G. S. M.

Oak.

FURNESS.—X. L. D. writes: "I am informed that African oak is the best for outside work. Is there such a thing, and is it readily obtainable? (2) Is it known by any other name? (3) Are all foreign oaks called wainscot, or does the term apply to one particular kind? (4) Can foreign oak be easily distinguished from English oak?"

(1 and 2) See correspondence on p. 235 of our issue for June 3rd. African oak is not very easily obtainable. (3) Wainscot as applied to oak simply means that it is for joinery. (4) Only an expert can tell; we may say, however, that foreign oaks are generally straighter in grain than English oak.

Pilfered Plans: Brickwork Pointing.

CARMARTHEN.—CYMRO writes: "(1) I find that a person who has obtained working drawings and specifications of houses which have been prepared by myself is making tracings and copies and building houses from them. Have I any legal remedy? (2) What aggregate should be mixed with Portland cement to give it a good white colour for pointing with red brickwork?"

(1) You have no remedy as the law at presents stands. You should have stipulated in the contract that the person to whom you supplied the plans was not allowed to keep them nor to make any other use of them. (2) Powdered chalk. White pointing is usually done with lime-putty.

Law Cases.

The Accident at All Souls', Langham Place.—The case of *Alleyn* v. *the Langham Hotel Co., Ltd.* was heard last week in the King's Bench division of the High Court of Justice. The plaintiff, a widow, claimed damages for personal injuries received through the fall of the balustrade at All Souls' Church, Langham Place, last July, when it will be remembered a rope with flags on it was attached to the hotel at one end and to the church at the other, on the occasion of her Majesty the Queen opening the Regent's Park bazaar. The defendant company denied negligence, and asserted that the balustrade was in normal circumstances strong enough to support the cable, and was not in a defective nor dangerous condition. If it was defective it was so because of a latent flaw which was not discoverable from the exterior and could not have been detected prior to the fall.—The jury returned a verdict for the plaintiff, with £600 damages.—It is noteworthy that since the accident the balustrade and other stonework has been renewed.

SEA WATER FOR LONDON.*

By J. GRANT-BROWNING, A.M.I.C.E.

THE object of this short paper is merely to revive a formerly much-discussed project, and as briefly as possible to lay its advantages and disadvantages before you. About twenty years ago it was proposed to supply London with sea-water from Brighton, and an Act of Parliament was actually obtained for that purpose, no opposition being raised by any of the water companies, but through the lack of private enterprise the scheme was abandoned. There was also the objection that it multiplied the already numerous water authorities supplying the Metropolis, and the Act did not give powers to force the use of sea-water on the public authorities for municipal purposes, and would not in consequence mitigate the evil now existing—that is to say, the enormous waste of filtered drinking water caused by its use in street-watering, sewer-flushing, water-closet flushing, private baths, public swimming baths and the extinction of fires.

That difficulty could be overcome shortly by the incoming Water Board, who could easily obtain the necessary powers on the score of health and economy. The scheme would remove the necessity of going to Wales for a further supply, and would cost roughly about 25 per cent. of the amount estimated for that purpose if the water were drawn from Shoeburyness, which is much nearer than Brighton. We should also be drawing on an inexhaustible supply requiring no filtration.

The best route from the pumping station at Shoeburyness would be through the town of Southend, and then through all the intermediate growing suburbs to Woolwich, where a branch main could be placed across the Thames to serve South London. The scheme would comprise water towers of the necessary capacity and heights to serve each district passed through, mains therefrom along all main roads in thickly-populated districts, and in the first instance standpipes, hydrants and services to manhole flushing tanks, public baths and washhouses, &c.; and when the demand arose, which it would undoubtedly do, a service main in all other roads would follow, and a connection to each house for private baths and water-closet flushing purposes. In the meantime, however, the householders would have access to the standpipe at the corner of the street by paying a small fee annually for a key. The key system has been adopted at Clacton-on-Sea, where it is much appreciated.

The advantages of salt water for street-watering are that it takes longer to dry than fresh water, is less liable to frost and gives off a pleasant odour. The disadvantages are that on macadamized roads which are not properly scavenged the mud in rainy weather becomes very sticky and adheres to wheels of vehicles, cars and bicycles, and if not promptly removed either hastens rust or leaves its mark on paint.

There can surely be no disadvantage in utilizing sea water for sewer flushing, public baths, extinction of fires, the watering and squeegeeing of asphalt and wood-paved streets, and flushing of house drains, except on the plea of expense in the first cost; and as the abundant supply of good fresh water for drinking and other domestic purposes is an absolute necessity, any scheme which would augment by the prevention of its waste the serving of London, without costing an enormous amount of money in getting it from Wales, should be the first matter of consideration.

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* A paper read before the "Surveyor" conference at the Building Trades' Exhibition, Royal Agricultural Hall, Islington, London, N., on June 12th, 1903.

The Editors of THE BUILDERS' JOURNAL, in response to many repeated requests by students and others, have compiled the following list of the most suitable books published on the various subjects which appertain to architecture and the building trades. Special arrangements have been made to enable readers to be supplied with books at the published prices, *post free.* An endeavour will be made to obtain for regular readers and subscribers any other Technical Books not in this or succeeding lists, and these will also be forwarded to them post free. The names given in brackets are those of the authors or editors of the respective books.

The Builders' Journal List of Technical Books.

Remittances for the amounts stated below should be sent by postal orders, addressed to THE PUBLISHER, TECHNICAL JOURNALS, LTD., 6, Great New Street, London, E.C.

No. 2 LIST.

ART, DECORATION, AND DESIGN.

	s.	d.
Handicraft and Design (W. A. S. Benson)	5	6
A Primer of Art (The Hon. John Collier)	1	0
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Trade and Craft.

Baths of To-Day.

The new bath list issued by Messrs. Adams & Co., of Leeds, contains, in addition to the usual photographic reproductions, three large colour prints of new bath designs introduced by this well-known firm of sanitary engineers. The designs in question are the "Pomegranate," the "Lily" and the "Chesnut." Each is substantially the same in treatment, that is to say, the bath proper is decorated on the outside with a floral design treated as a running pattern, the hood at the end, with shower over, having a sprig of the design continued upwards in a simple but effective manner. The walls of the bathroom are shown tiled with a similar design, so that the result is very harmonious and pleasing. The colour schemes are good, being bright and cheerful. Adams's special hooded bath 6ft. long. inside, including parallel-sided cast-iron plunge bath 2ft. wide nside, with wide roll edge, is metallic enamelled and has stencil decoration in colours on the outside; the stand- and supply-pipes are of copper nickel-plated and the bath has hot, cold, waste, spray and shower ittings, with a lock-up door giving access o them. An inexpensive variety of this bath is made as well as the more costly rticle. All kinds of other baths are supplied by the firm—one which seems to us to be specially good is the "Insular," which as a base skirting that gives it a firm ppearance.

New Companies.

F. W. Mayer & Co, Ltd., builders, contractors,
corators, &c., dealers in stone, sand, lime. bricks, &c.
apital: £20,000 in £10 shares.

Edwin Marshall & Sons, Ltd., builders, contractors,
corators &c., dealers in stone, sand, lime, bricks,
nber, &c, Chapel Street Saw Mills, Ashton-under-Lyne,
apital: £6.000 in £1 shares.

Crown Staffordshire Porcelain Co, Ltd., stone-
are, brick, terra-cotta and tile manufacturers, &c.
apital: £11,000 in £1 shares (3,000 preference, 6,000
dinary and 2,000 others to be issued as preference or
dinary at option of directors).

Bowling Co., Ltd., colliery proprietors, engineers,
ick, tile and pipe manufacturers, &c., Bowling Bradford.
pital: £20 000 in £1 shares.

Engineering Contract Corporation, Ltd., iron-
unders, electrical and mechanical engineers, &c., 36,
ombard Street, E.C. Capital: £3 000 in £1 shares.

J. H. Sankey & Son, Ltd., builders' merchants,
ilders and contractors, &c., Essex Wharf, Canning
wn, Essex. Capital: £50,000 in £1 shares.

Property Trust, Ltd., land and house dealers
ilders, contractors, &c. Capital: £5 000 in £1 shares.

W. & J. Ellison, Ltd., ironmongers, ironfounders,
gineers' tool makers, builders, contractors, &c., Para-
e Street, Liverpool. Capital: £50,000 in £10 shares.

Albert Freehold Brickworks, Ltd., brick tile and
tery manufacturers. Capital: £20,000 in £1 shares.

British Electric Signs Co., Ltd. manufacturers and
alers in electric and other advertising signs and
vices, &c. Capital: £20,000 in £1 shares (12,000
ferred ordinary).

Henry Bramah & Sons, Ltd., furnishing and general
nmongers, builders' ironmongers, &c., 11, Forgate
l Chapel Walk, Sheffield. Capital: £10 000 in £1
res

V. Hosken & Co., Ltd., quarry owners, granite and
ne merchants, &c. Commercial Road, Penryn,
nwall. Capital: £20,000 in £1 shares.

owley Daniel Ltd., tar paving and asphalt con-
ctors, &c. Capital: £100 in £1 shares.

. G. Brown (Brighton), Ltd., ironmongers' and
ders' merchants, &c., 70, Trafalgar Street, Brighton.
ital: £25,000 in £1 shares (10,000 preference).

artshill Brick and Tile Co., Ltd., brick and tile
nufacturers, and dealers in bricks, tiles, pipes, stone-
e and earthenware, &c., Hartshill, near Stoke-on-
nt. Capital: £7,000 in £1 shares.

ermann M. Moller, Ltd. timber merchants, saw-
owners, &c., Baltic Chambers, Sunderland. Capital:
000 in £5 shares.

Coming Events.

Saturday, July 4.

Northern Architectural Association.—Annual Excursion to Ripon Cathedral and Skelton Church, 12.10 p.m.

Wednesday, July 1.

Royal Archæological Institution.—Prof. B. Lewis on "Roman Epigraphy in North Italy." Mr. Harold Brakspear on "Roman Villa at Box," 4 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary Meeting at 8 p.m.

Friday, July 3.

Art Workers' Guild.—Paper on "Masonry," 8 p.m.

Tuesday, July 7.

Sanitary Institute.—Annual Congress and Health Exhibition at Bradford. First Day. Reception of the Members in the Town Hall by the Mayor of Bradford at 12.30. Public Luncheon in Technical College at 1.30 p.m. Opening of the Health Exhibition in Bellevue Volunteer Barracks, Manningham Lane, by the Mayor of Bradford, at 3 p.m. (Exhibition remains open till July 25th.) Inaugural Address to the Congress in the Public Hall of the Technical College by the Earl of Stamford, at 8.30 p.m.

Wednesday, July 8.

Sanitary Institute.—Annual Congress and Health Exhibition at Bradford. Second Day. Conferences of Municipal Representatives, of Medical Officers of Health, of Engineers and Surveyors to County and other authorities, of Veterinary Inspectors, of Sanitary Inspectors, of Ladies on Hygiene, on Industrial Hygiene, and on the Hygiene of School Life, from 9 30 a.m to 2 p.m., in the Town Hall, Technical College, Mechanics' Institute, Church Institute, and School Board Offices. Conversazione and Reception in St. George's Hall by the Mayor at 7.30 p.m.

Thursday, July 9.

Sanitary Institute.—Annual Congress and Health Exhibition at Bradford. Third Day. Meetings of Section I., Sanitary Science and Preventive Medicine; Section II., Engineering and Architecture; and Section III., Physics, Chemistry and Biology, in the Church Institute and the Technical College from 10 a.m. to 2 p.m. Lecture in the Public Hall, Technical College, by John Slater, B.A., F.R.I.B.A., at 8.30 p m.

Friday, July 10.

Sanitary Institute.—Annual Congress and Health Exhibition at Bradford. Fourth Day. Meetings of Sections I., II. and III. from 10 a.m. to 2 p.m. Closing Meeting of Congress in Church Institute at 1.30 p.m. Popular Lecture in Mechanics' Institute, by Major Ronald Ross, at 8.30 p.m.

A QUEENSLAND TREE.

THE silky oak (*Greville arobusta*), one of the most valued trees for timber purposes in North Queensland, is spreading in many parts of the world, especially in Ceylon; it is very hardy and drought-resisting, and flourishes equally well at sea level and 6,000ft. above. The tree enjoys popularity and wide diffusion on account of its vitality, beauty of foliage and value of timber. Its favourite habitat are the scrubs that lie back from the northern coasts of Queensland. The silky oak exudes both a gum and a resin. As to its vernacular name, Hooker says: "From its deeply dissected foliage and the silkiness of the underside, it has obtained the name of 'silk oak' among the pine cutters of Moreton Bay (Queensland)." When split on the quarter, this timber shows a handsome oak-like grain, the prefix silky being either because of the silky underside of the leaf or on account of the bright appearance of the freshly split wood. The Queensland aborigines call the tree "Kroomkabang." The tree bears a profusion of orange-yellow flowers, which, like those of most members of the natural order to which it belongs, are rich in honey, and hence are sought after by the bees. The chief characteristic of the timber is its fissility. It is light in colour, and has a handsome oak-like figure. It is moderately hard, and works well. Two well-seasoned slabs of this wood have weights which correspond to 38lb. 14oz. and 36lb. 2oz. respectively per cub. ft. Specimen slabs of this beautiful wood can be inspected at 49, Eastcheap, at the City office of the Agent-General for Queensland; these slabs, together with specimens of other North Queensland woods, were supplied by Messrs. Rooney & Co., timber merchants, Townsville. A Bournemouth contractor, Mr. C. Hunt, recently ordered 5,000ft. of silky oak and cedar for testing purposes from Queensland.

Current Market Prices.

FORAGE.

		£	s.	d.	£	s.	d
Beans	per qr.	1	9	9	1	12	3
Clover, best	per load	4	7	6	4	15	0
Hay, best	do.	3	15	0	5	10	0
Sainfoin mixture	do.	3	15	0	4	5	0
Straw	do.	1	8	0	2	0	0

OILS AND PAINTS.

Castor Oil, French	per cwt.	1	1	10	1	2	2
Colza Oil, English	do.	1	4	0		—	
Copperas	per ton	2	2	6		—	
Lard Oil	per cwt.	2	15	0	2	17	0
Lead, white, ground, carbonate	do.	1	4	10	—		
Do. red	do.	1	0	$4\frac{1}{2}$			
Linseed Oil, barrels	do.	1	2	6			
Petroleum, American	per gal.	0	0	$5\frac{5}{8}$	0	0	$5\frac{3}{4}$
Do. Russian	do.	0	0	$4\frac{1}{8}$	0	0	$4\frac{1}{4}$
Pitch	per barrel	0	7	6		—	
Shellac, orange	per cwt.	6	12	0		—	
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Town	per cwt.	1	9	0			
Tar, Stockholm	per barrel	1	1	6		—	
Turpentine	per cwt.	1	17	$10\frac{1}{2}$		—	

METALS.

Copper, sheet, strong	per ton	71	0	0		—	
Iron, Staffs., bar	do.	6	5	0	8	10	0
Do. Galvanised Corrugated sheet	do.	11	0	0	11	5	
Lead, pig, Soft Foreign	do.	11	13	9		—	
Do. do. English common brands	do.	12	2	6		—	
Do. sheet, English 3lb. per sq. ft and upwards	do.	14	10	0		—	
Do. pipe	do.	15	0	0		—	
Nails, cut clasp, 3in. to 6in.	do.	9	5	0		—	
Do. floor brads	do.	9	0	0		—	
Steel, Staffs., Girders and Angles	do.	5	15	0	6	10	
Do. do. Mild bars	do.	6	12	6	7	2	6
Tin, Foreign	do.	127	15	0	128	5	0
Do. English ingots	do.	129	0	0		—	
Zinc, sheets, Silesian	do	26	0	0		—	
Do. do. Vieille Montaigne	do.	26	5	0		—	
Do. Spelter	do.	20	0	0	20	5	0

TIMBER.

Soft Woods.

Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow	do.	5	5	0	6	5	0
Do. Pitch	do.	3	0	0	3	4	0
Laths, log, Dantzic	per fath.	4	10	0	5	10	0
Do. Petersburg	do.	7	5	0		—	
Deals, Kovda, 3rd Yell. 3×9	do.	13	15	0		—	
Do. Petersburg, 1st White 3×11	do.	13	5	0		—	
Do. Oserka, inferior, 5th Yellow 3×9	do.	7	0	0		—	
Do. Libau, unsorted White 3×10	do.	5	0	0		—	
Do. do. do. 3×9	do.	5	10	0		—	
Do. Gothenburg, Yell. and White 3×9	do.	4	0	0		—	
Do. do. do. $2\frac{1}{2}$×7	do.	5	0	0		—	
Do. Lulea, 1st Yellow $2\frac{1}{2}$×7	do.	10	15	0		—	
Do. Galician, White, 1st 3×9	do.	8	0	0		—	
Do. do. do. 3rd 3×9	do.	6	15	0		—	
Do. Asbacka, Yellow $2\frac{1}{2}$×7	do.	7	0	0		—	
Do. Lewisport, 4th Yellow Pine 3×13 and 3×11	do.	6	5	0		—	
Do. Söderhamn, Yell., 3rd, 3×8	do.	12	5	0		—	
Do. do. do. 4th, 3×7	do.	9	15	0		—	
Do. do. do. 5th, 3×9	do.	9	5	0		—	
Do. Riga, White 3× 0	do.	6	17	6		—	
Do. Quebec, 2nd Bright Yellow Pine, 3×9	do.	14	10	0		—	
Do. do. do. 3×11×13ft.	do.	15	10	0		—	
Do. do. 1st Red, 3×11	do.	18	0	0		—	
Do. Montreal, Bright Yell. Pine, 3×11×16ft.	do.	9	15	0		—	
Do. St. Johns, 1st, 2nd and 3rd unsorted bright Spruce, 3×11	do.	8	0	0		—	
Do. do. do. do 3×9	do.	8	0	0		—	
Do. do. 1st, 2nd and 3rd White Spruce, 3×7	do.	7	10	0		—	
Battens, all kinds	do.	6	10	0	12	0	0
Flooring Boards 1in. prepared, 1st	per square	0	10	3	0	12	3
Do. 2nd	do.	0	9	0	0	11	3
Do. 3rd &c.	do.	0	7	6	0	10	0

Hard Woods.

Ash, Quebec	per load	3	12	6		—	
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	15	0	0	20	0	0
Cedar, Cuba	per ft. sup.	0	0	$5\frac{1}{4}$		—	
Do. Honduras	do.	0	0	$5\frac{31}{32}$		—	
Do. Tobasco	do.	0	0	$4\frac{31}{32}$		—	
Elm Quebec	per load	4	0	0		—	
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0	0	$6\frac{1}{32}$		—	
Do. African	do.	0	0	$4\frac{11}{32}$		—	
Do. St. Domingo	do.	0	0	$3\frac{29}{32}$		—	
Do. Cuba	do.	0	0	$5\frac{5}{16}$	0	0	$5\frac{7}{8}$
Do. Gaboon	do.	0	0	$3\frac{15}{32}$		—	
Do. Tobasco	do.	0	0	$6\frac{11}{32}$	0	0	$8\frac{1}{4}$
Oak, Dantzic and Memel	per load	3	5	0	3	15	0
Do. Quebec	do.	6	5	0	6	10	0
Teak Rangoon, planks	do.	16	0	0	17	10	0

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Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

Beckenham.—For making up the following roads:—Blandford Road (portion of), 240yds. in length; Stanmore Terrace, 90yds. in length, for the Beckenham Urban District Council. Mr. John A. Angell, surveyor:—

J. Meston, North Kensington	£1,504	15	11
Fry Brothers, Greenwich	1,259	12	8
W. Pearce, Forest Hill	1,244	13	1
Woodham & Sons, Catford	1,192	0	0
Mowlem & Co.,* Grosvenor Wharf, Westminster, London, S.W.	1,172	0	0

* Accepted.

Bournemouth.—For making-up, sewering, kerbing and channelling Alma Road, for the Bournemouth Town Council. Mr. F. W. Lacey, M.I.C.E., borough engineer, Bournemouth:—

W. P. Saunders, Bournemouth	£1,303	10
H. C. Brixey, Parkstone	1,163	0
M. Loader, Bournemouth	1,143	0
Grounds & Newton,* Bournemouth	1,091	5

* Accepted.

Cheadle (Staffs).—For the works in connection with the Ipstones water supply, for the Cheadle Rural District Council:—

T. Rowland, Sandiway, Northwich	£1,942
Wyatt Brothers, Whitchurch, Salop	1,650
W. Williams, Etruria	1.500
F. Barke,* 2, Lytton Street, Stoke-on-Trent	1.475
W. Alcock. Cheadle. Staffs	1.473
P. Plant, Cheadle, Staffs	1,325

* Provisionally accepted.

Devonport.—For the erection of a boundary wall to land adjoining the Workhouse, for the Board of Guardians. Mr. Edgar M. Leest, M.S.A., architect, 14, St. Aubyn Street, Devonport. Quantities by Messrs. Leest & Adams, Devonport:—

R. H. B. Neal	£639	0
T. Jenkins & Son, Devonport	674	0
J. Crockerell, Devonport	650	0
H. J. Allen, Devonport	640	0
T. May	618	0
W. C. Shaddock	597	9
W. E. Blake	509	0
Pearce Brothers	566	0
W. G. Perkins, Devonport	545	0
J. H. Palmer	543	0
F. C. Ambrose	525	0
Matcham & Co, Ltd	512	0
G. H. Smith & Son,* Devonport	499	15

* Accepted. [Rest of Plymouth.]

Highfield (near Liverpool).—For hot-water supply, cooking apparatus, boilers, &c., for the new infirmary, Highfield, near Liverpool. Mr. E. Kirby, F.R.I.B.A., architect, 5, Cook Street, Liverpool:—

	A.			B.		
Clements, Jeakes & Co, London	£6,088	8	0	—		
Dargue, Griffiths & Co., Liverpool	4,441	9	4	—		
J. Barclay, Glasgow	4,222	10	0	—		
J. Medcalf, Preston	4 155	0	0	£693	17	0
Summerscales & Co., Keighley	4,151	5	0	730	0	0
Newton, Chambers & Co., Liverpool	3,702	0	0	632	0	0
R. Dawson & Co., Stalybridge	3,673	13	7	341	5	8
Killick & Cochran, Liverpool	3 630	0	0	375	0	0
C. Hardacre & Co., Liverpool	3,582	0	0	—		
Ashwell & Nesbit, Leicester	3,478	0	0	737	0	0
T. Bradford & Co., Manchester	£3,460	0	0	—		
Mather & Platt, Manchester	3,460	0	0	£359	6	0
Moorwood & Co., Sheffield	3,280	0	0	480	0	0
Lea & Warren, Kettering (alternative tender of atmospheric)	3,200	0	0	—		
G. Fawley & Son, Halifax	3.192	1	7	567	14	10
Dilworth & Carr, Preston	3,165	0	0	471	10	0
Brightside Foundry Co., Sheffield	3,035	10	0	450	0	0
L. Hill, Liverpool	2,770	0	0	415	0	0

A. Tenders as specification supplied. B. Extra cost if copper in lieu of iron hot-supply pipings.

Holbeach (Lincs).—For proposed additions to the Holbeach Union Infirmary. Mr. F. Burdett Ward, architect, 7, York Row, Wisbech, and 4, The Crescent, Spalding. Quantities by the architect:—

W. Pattinson & Son, Sleaford	£3,594	0
Hinson & Co., Stamford	3,470	0
Clarke & Sons, Whittlesea	3,458	17
Rands & Son, Wisbech	3,300	0
R. Shanks, Chatteris	3,239	0
J. R. Bateman & Son,* Sutton Bridge, Wisbech	3,100	0
J. Guttridge, Peterborough	2,998	0

[Architects revised estimate, £3,061.]

* Accepted subject to the approval of the Local Government Board.

Leek.—For the erection of an electric lighting station, Station Street, for the Urban District Council. Mr. John Taylor, architect, Leek and Longton. Quantities by architect:—

Dean & Co.	£2,741	Grace	£2,490
J. Heath	2,602	J. Bagnall	2,403
Salt	2,555	W. Turner*	2,374
Tompkinson & Bettelley	2,513		

* Accepted.

London, N.—For the supply of two and three wire olternating-current, single-phase, 30-kw. street tank transformers and switch boxes, for the Islington Borough Council:—

Lahmeyer Electrical Co., Ltd.	£9,506	18	6
British Electric Transformer Co., Ltd.	4,265	7	6
J. Fowler & Co., Ltd.	4,056	10	3
British Electric Transformer Co., Ltd.	3,895	7	6
Ferranti Ltd.	3,772	15	3
British Westinghouse Electric and Manufacturing Co., Ltd.	3.719	18	6
Johnson & Phillips	3,651	15	9
British Thomson-Houston Co., Ltd.	3,487	12	9
Ferranti Ltd.	3,448	15	3
Electric Construction Co., Ltd.*	2,966	10	6

* Accepted.

London.—For the erection of head offices for the London and Manchester Industrial Assurance Co. Ltd., corner of Finsbury Square and Finsbury Pavement. Messrs. Gilbert & Constanduros, architects, 43, Finsbury Square, E.C. Quantities by Messrs. Batstone Brothers, 110, Cannon Street, E.C.:—

T. Rider & Sons	£25,764
W. H. Lascelles & Co.	23,419
B. Lawrence & Sons	23,139
Colls & Son	22,817
George Trollope & Sons	22,700
W. Downs	22,673
Holliday & Greenwood	21,975
Kirk & Kirk	21,898
J. Greenwood, Ltd.*	21,736

* Accepted.

London, N.—For 140 workmen's dwellings in Hawthorn and Beechwood Road, Hornsey, for the Hornsey Urban District Council. Mr. E. J. Lovegrove, engineer and surveyor:—

Abbot & Herbert, Acton	£58,725
B. E. Nightingale, Lambeth	50,800
C. Wall, Chelsea	50,579
C. Dearing & Son, Islington	49,975
McCormick & Sons, Canonbury	49,876
Killby & Gayford, Finsbury	49,833
A. T. Haines & Co., West Ham	49,349
Sabey & Son, Islington	48,515
Peerless, Dennis & Co., Eastbourne	48,428
W. Johnson & Co., Ltd., Wandsworth Common	48 060
J. E. Johnson & Son, Leicester	47,884
Martin, Wells & Co., Ltd., Vauxhall	47,254
Hardy Brothers, Green Lanes, Palmers Green	46,292
Shrouder & Matthews, Stevenage, Herts	46,200
S. Redhouse, sen., Baldock, Herts	45,153
W. Lawrence & Son, Waltham Cross	44,444
J. Wilmott & Sons, Hornsey	43,084
J. Barker & Co., Ltd.,* 83, Kensington High Street	38,900

[Engineer and surveyor's estimate, £40,385.]

* Accepted.

London, S.E.—For alterations, additions, &c., to the Hatcham Arms and shop adjoining, 92 & 94, New Cross Road, S.E. Mr. William Stewart, architect, Newlyn House, 4 and 5, Aldgate, E.C.:—

W. Gladding	£1,697	W. Wallis	£1,495
J. & H. Cocks	1,649	Todd & Newman	1,410
Harris & Wardrop	1,639	W. Irwin	1,390
Dolman & Co.	1,500	W. Nash,* New Cross	1,389

* Accepted.

London, S.W.—For the erection of a branch post-office at Knightsbridge, S.W., for H.M. Office of Works, &c.:—

J. Mowlem & Co.	£5,700	Speechley & Smith	£4,490
C. Horton	5,200	Turtle & Appleton	4,486
Lole & Lightfoot	5,048	J. Chessum & Son	4,438
J. Shelborne & Co.	4,940	W. Lawrence & Sons	4,294
W. King & Son	4,800	Spiers & Son	4,290
W. J. Renshaw	4,697	F. & H. Higgs	4,280
		Foster Brothers	4,255
Patman & Fotheringham, Ltd.	4,643	W. H. Lorden & Son	4,222
Perry & Co.	4,550	B. E. Nightingale*	4,000

* Accepted.

Luton.—For the erection of vagrant wards at the workhouse, Dunstable Road, Luton, for the Guardians. Messrs. J. R. Brown & Son, architects, Castle Street, Luton:—

Abrahams, Cambridge Street	£2,000
Field	1,915
Gough & Co., Church End, Hendon	1,808
Attwood, Ashton Road	1,720
Pryer, Moor Street	1,713
Turner. Hibert Street	1,693
Dunham, Guildford Street	1,654
Hoyle & Maidment, Mill Street	1,675
Mallet & Wood, Grove Road	1,559
J. Sanders,* Hightown, Luton	1,525

* Accepted. [Rest of Luton.]

Netherfield (Notts).—For the enlargement of premises for the Netherfield Co-operative Industrial Society. Mr. R. Whitbread, M.S.A., architect, Carlton:—

Marshall & Coppin, Carlton, Notts	£1,300
Cooper & Son, Nottingham	1,250
F. Wright, South Nottingham	1,235
Hutchinson & Son, Nottingham	1,215
Oliver & Son, Nottingham	1,165
G. T. Tegerdine, Carlton, Notts	1,150
T. H. Harper, Carlton, Notts	1,142
J. Lewin,* Forester Street, Netherfield, Notts	1,110

* Accepted.

Southampton.—For reconstructing part of the town quay, Southampton (contract No. 1), for the Southampton Harbour Board. Mr. E. Cooper Poole, A.M.I.C.E., engineer:—

Pedrette & Co., London	£30,141	6	10
E. H. Page, Cardiff	24,432	7	4
C. J. Leather, Portsmouth	21,713	0	0
W. Rigby & Co., Lewisham	18,419	0	0
A. Fasey & Son, London	17,733	12	11
T. Rickard, Penrhyn	16,360	0	0
F. Grace, Southampton	15,682	0	0
Playfair & Toole,* Southampton	15,337	0	0

[Engineer's estimate, £16,000.]

* Accepted.

(*Continued on page* xviii.)

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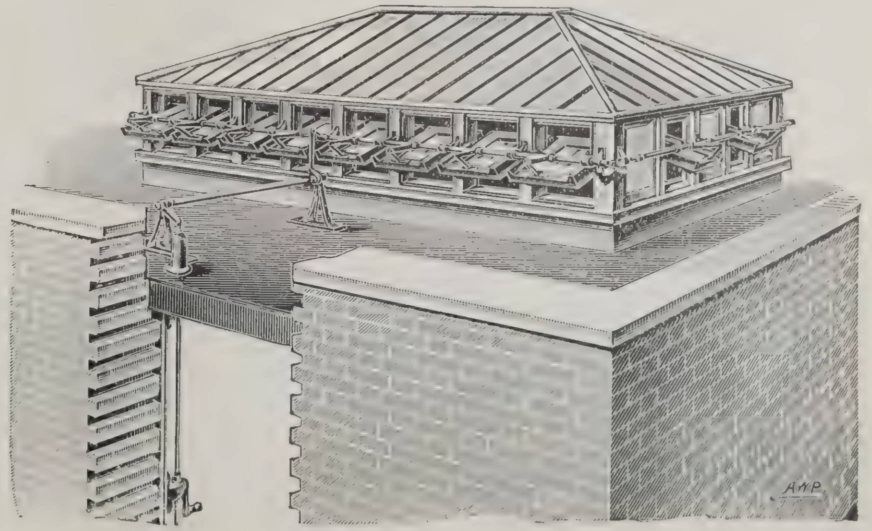

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Complete List of Contracts Open.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED
		BUILDING:		
July	2	Ashton-under-Lyne—Classroom and Cloakroom	—	T. George & Son, Architects, Old Square, Ashton-under Lyne.
"	2	Barnsley—Pulling-down and Rebuilding Hotel	—	R. & W. Dixon, 5 Eastgate, Barnsley.
"	2	Bingley, Yorks—Operating Room, &c.	—	W. R. Nunns, 13 Market Street, Bingley.
"	2	Horbury Bridge, Yorks—Store	Industrial Co-op. Soc., Ltd.	W. & D. Thornton, Architects, Oates Street, Dewsbury.
"	2	Morley, Yorks—Bakers' Fittings, &c.	Industrial Co-op. Society	R. Castle & Son, Architects, London City and Midland Bank Chambers, Cleckheaton.
"	2	Weston, near Beccles—Two Cottages	Captain Barne	A. Pells, Architect, Beccles.
"	2	Penzance—Alterations to Lavatory	Markets Committee	F. Latham, Borough Engineer, Public Buildings, Penzance.
"	2	Penzance—Store	Quay Committee	F. Latham, Borough Engineer, Public Buildings, Penzance.
"	3	Helston—Alterations, &c., to Workhouse	Union Guardians	W. J. Trezise, Master, Union Workhouse, Helston.
"	3	Clyne—Alterations, &c.	—	Messrs. Chalmers, 18 Golden Square, Aberdeen.
"	3	Rudry—Alterations, &c., to Chapel	—	J. H. Phillips, Architects, Clive Chambers, Windsor Place, Cardiff.
"	3	Cudworth—Pumping-House, &c.	Midland Railway Co.	Company's Architect, Cavendish House, Derby.
"	3	Northampton—Timber Stables	Midland Railway Co	Company's Architect, Cavendish House, Derby.
"	3	Bradford—Park Lodge	Corporation	F. E. P. Edwards, City Architect, Whitaker Buildings, Brewery Street, Bradford.
"	3	Inverallochy—Additions to Property	—	Mr. Lawrence, Gowan Hill, Rathen.
"	3	Great Crosby—Alterations, &c., to Office	Urban District Council	Anderson & Crawford, 36 Dale Street, Liverpool.
"	4	Cilfynydd, Wales—Seventy to Ninety Houses	Building Club	A. O. Evans, Architect, Pontypridd.
"	4	Floss Hall, Durham—Timber Footbridge	Brandon Urban District Council	J. McKenzie, Surveyor, Langley Moor.
"	4	Glasgow—Library	Corporation	A. Davie & M'Kim, 219 St. Vincent Street, Glasgow.
"	4	Sligo—Auxiliary Dispensary Depot	Guardians	Mr. Kilgallen, Architect, Abbeyville, Sligo.
"	4	Treforest, Wales—Eighty to One Hundred Houses	Park Building Club	A. O. Evans, Architect, Pontypridd
"	4	York Town, Camberley, Surrey—Twelve Cottages	—	W. J. Hodgson, Engineer, Vectis, Camberley.
"	4	Garesfield Colliery, High Spen—Workmen's Institute	Consett Iron Co., Ltd.	C. E. Oliver, Architect, Company's General Offices, Consett.
"	4	Gilfach, Pengam—Two Houses	—	W. Harris, Architect, Gilfach, Pengam.
"	4	Coundon—Billiard Room, &c.	—	Secretary, Workmen's Club, Wharton Street, Coundon.
"	4	Louth, Lincs—Science Buildings	Grammar School Governors	E. E. Bentley, 1 Pelham Chambers, Old Market Place, Grimsby.
"	4	Romsey—Cottage and Alterations to Police Station	County Council	W. J. Taylor, County Surveyor, The Castle, Winchester.
"	4	Catford, S.E.—Extensions of Works	J. Robertson & Son	T. George & Sons, Architects, Old Square, Ashton-under-Lyne.
"	4	West Bay, near Bridport—Coastgard Buildings	Admiralty	Superintending Civil Engineer, H.M. Breakwater, Portland.
"	4	London, N.W.—Orphanage	—	S. G. Goss, 3 Broad Street Buildings, Liverpool Street, E.C.
"	4	Amberley—Residence	—	W. L. Barrett, Arcade Chambers, Bognor.
"	6	Six Bells, Abertillery—Twenty Houses	Arrail Griffin Building Club, No. 1	C. T. Evans, 8 Queen Street, Cardiff.
"	6	Caerphilly—New Church	—	W. B. Rees, 37 St. Mary Street, Cardiff.
"	6	Derby—Battery House	Electric Light Committee	A. Eaton, 6 St James's Street, Derby.
"	6	Wellington—Town Hall	Markets Committee	C. R. Dalgleish, Architect, Central Chambers, Wellington, Salop.
"	6	Grimsby—School Buildings	—	E. E. Bentley, 1 Pelham Chambers, Old Market Place, Grimsby.
"	6	Belfast—Alterations, &c., to Church	—	T. Houston, Architect, King's Court, Wellington Place, Belfast.
"	6	Glanamman, Wales—300 Cottages	Colliery Co.	D. J. Michael, 97 Oxford Street, Swansea.
"	6	Glasgow—Buildings	Caledonian Railway Co.	Company's Divisional Engineer, Princess St. Station, Edinburgh.
"	6	London, W.—Wall, &c.	Paddington Borough Council	E. B. B. Newton, Borough Surveyor, Town Hall, Paddington, W.
"	6	Nantymoel Ireland—Extension of Premises	Industrial Co-op. Society	Secretary, Society's Offices, Nantymoel.
"	6	Preston, Lancs—Brickwork	Guardians	Mr. Whitwell, Engineer, Fulwood Workhouse, Preston, Lancs.
"	6	Micklewood, Norfolk—Alterations, &c., to Workhouse	Guardians	J. O Bond, 15 Upper King Street, Norwich
"	6	London, E.—Alterations, &c.	Guardians	F. J. Tootell, 74 Vallance Road, Whitechapel, E.
"	6	Hornsey—Erection of Buildings	Urban District Council	E. J. Lovegrove, 99 Southwood Lane, Highgate, N.
"	6	Abergele, Wales—School Enlargement	County School Governors	F. Bellis, 204 High Street, Bangor.
"	6	Dartmouth—Four Houses	—	E. H. Back, Architect, Dartmouth.
"	6	Falmouth—Conveniences	Corporation	Borough Surveyor, Municipal Offices, Falmouth.
"	6	Horncastle, Lincs—Culvert	Rural District Council	H. White, 4 Church Lane, Horncastle.
"	6	Stranorlar, Ireland—Two Labourers' Cottages	Rural District Council	G. M'Laughlin, Clerk, Stranorlar.
"	6	Wicklewood, Norfolk—Alterations, &c., to Workhouse	Forehoe Union Guardians	J. O. Bond, 15 Upper King Street, Norwich.
"	6	London, W.—Lime, Cement, &c.	Ealing Town Council	C. Jones, Borough Surveyor, Town Hall, Ealing, W.
"	6	Glasgow—University Extension	University Court	J. Miller, 15 Blythswood Square, Glasgow.
"	6	Yeovil—Mortuary, Washhouse, Convenience and House	Corporation	A. Oddy, Borough Surveyor, Municipal Office, Yeovil.
"	7	Waltham Abbey—Foundations	Urban District Council	W. Turner-Streather, Surveyor, High Bridge St., Waltham Abbey.
"	7	Portsmouth—Enlargement of Post Office	Commnrs. of H.M. Works, &c.	Secretary, H.M. Office of Works, Storey's Gate, London S.W
"	7	Dartford, Kent—Boundary Wall	Joint Hospital Committee	R. Marchmont, 28 Theobald's Road, London, W.C.
"	8	Vauxhall—Boundary Wall	Guardians	W. Thurnall, Clerk, Offices, Brook Street, Kennington Road, S.E.
"	8	Southgate—Cricket and Football Pavilion	District Councils	C. G. Lawson, Surveyor, Council Offices, Palmer's Green, N
"	8	Sprowston—Alterations to Cloakrooms, &c.	—	C. J. Brown, Architect, Cathedral Offices, Norwich.
"	8	Ifton Heath—Four Cottages	—	W. H. Spaull, Architect, The Gables, Oswestry.
"	8	London, W.—Block of Workmen's Dwellings	St. Marylebone Borough Council	J. Wilson Town Clerk, Town Hall, Marylebone Lane, Oxford St., W.
"	9	Alexandra Park—Glasshouses	Parks, &c., Committee	City Architect, Town Hall, Manchester.
"	10	St. Austell—Schoolroom, &c.	—	J. Mutton, Charlestown, St. Austell.
"	10	Leicester—Car Depot, &c.	Tramways Committee	E. G. Mawbey, Engineer, Town Hall, Leicester.
"	11	Woolwich—Pulling Down and Rebuilding Club	Labour Club and Institute	C. W. Brooke, 63 Finsbury Pavement, E.C.
"	11	Garndiffaith, Wales—Alteration, &c., to Chapel	—	Fisher & Son, Architects, Club Chambers, Pontypool.
"	11	Langley Bridge, Sussex—Widening Bridge	East Sussex C.C.	F. J. Wood, County Surveyor, County Hall, Lewes.
"	13	Lismore, Ireland—Creamery	Co-op. Agricultural and Dairy Society, Ltd.	W. Hartnett, Secretary, Chapel Street, Lismore.
"	13	Pembroke Dock, Wales—Laboratory	County Schools Governors	D. E. Thomas, Architect, Victoria Place, Haverfordwest.
		ENGINEERING:		
July	2	London, N.W.—Wiring, &c.	St. Pancras Guardians	A. A. Millward, Clerk to Guardians, Town Hall, Pancras Rd., N.W.
"	2	Wolverhampton—Telephones, &c.	Guardians	F. Harrison, Clerk, Union Offices, St. Peter's Close, Wolverhampton.
"	2	London, N.W.—Road Roller and Scarifier	Hampstead Borough Council	A. P. Johnson, Town Clerk, Town Hall, Haverstock Hill, N.W.
"	2	Royston, near Barnsley—Waterworks	Urban District Council	J. H. Taylor, Engineer, Barnsley
"	2	Coventry—Pipework, &c.	Corporation	J. A. Jeckell, Engineer, Electricity Works, Sandy Lane, Coventry.
"	2	London, E.C.—Railway Stores	Gt. Indian Peninsula Rlwy. Co.	Secretary, Company's Offices, 48 Cophall Avenue, E.C.
"	3	Derby—Engine Pits	Midland Railway Co.	Company's Architect, Cavendish House, Derby.
"	3	Batley—Switchboard Extension, &c.	Corporation	Lacey & Sillar, 2 Queen Anne's Gate, Westminster.
"	3	Withington and Styal—Wiring	Chorlton Union Guardians	G. R. Pears, 16 John Dalton Street, Manchester.
"	4	Bristol—Gangways	Electrical Committee	H. F. Proctor, City Electrical Engineer Feeder Road, St. Phillips.
"	6	Madrid—Waterworks	—	Direccion General de Administracion Local Madrid.
"	6	Preston—Boilers	Guardians	Mr. Whitwell, Engineer, Fulwood Workhouse, Preston, Lancs.
"	6	Featherstone, Yorks—Special Pipes, &c.	Urban District Council	F. B. Rothera, Engineer, Council Offices, Featherstone.
"	6	Featherstone, Yorks—Main Laying	Urban District Council	F. B. Rothera, Engineer, Council Offices, Featherstone.
"	6	London W.—Boiler, &c.	Paddington Borough Council	E. B. B. Newton, Borough Surveyor, Town Hall, Paddington, W.
"	6	Bangor, Ireland—Station Meter	Urban District Council	Gas Manager, Gasworks, Bangor, co. Down.
"	6	Napsbury, near St. Albans—Hot-water Warming Apparatus	—	W. G. Austin, Clerk, Napsbury Asylum Committee, Guildhall, Westminster.
"	6	Limavady Junction, co. Derry—Sea Embankment	—	R. M. Fetter, Station Farm, Limavady Junction.
"	7	Brussels—Railway	Société Nationale des Chemins de Fer Vicinaux.	M. Simon, Rue de l'Ecluse, No. 19, Charleroi
"	7	London, W.—Pipes, &c	Acton District Council	D. J. Ebbetts, 242 High Street, Acton.
"	7	London, S.W.—Bogie Goods Wagons and Tank Locomotives	Secretary of State for India	Director-General of Stores, India Office, Whitehall, S.W.
"	8	London, N W—Wiring, &c.	St. Pancras Borough Council	Public Health Department, Town Hall, Pancras Road, N.W.
"	8	Esher, Surrey—Steel Footbridge	Urban District Council	A. J. Henderson, Engineer, Council Offices, Portsmouth Road, Thames Ditton.
"	9	Leek, Staffs—Electric Lighting Plant	Urban District Council	Burstall & Monkhouse, 14 Old Queen Street, Westminster, S.W.
"	9	Swansea—Crane	Harbour Trustees	A. O. Shenck, Trustees' Engineer, Harbour Office, Swansea.
		IRON AND STEEL:		
July	6	Dublin—Girders	Great Northern Rly. Co. (Ireland)	Company's Engineer-in-Chief, Dublin.
"	6	Featherstone, Yorks—Pipes	Urban District Council	F. B. Rothera, Engineer, Council Offices, Featherstone, Yorks.
"	6	London, W—Castings, &c.	Ealing Town Council	C. Jones, Borough Surveyor, Town Hall, Ealing, W.
"	7	London, W.—Weldless Steam Pipes	Acton District Council	D. J. Ebbetts 242 High Street, Acton, W.
"	8	Leeds—Wrought-iron or Steel Fencing	—	City Engineer, Municipal Buildings, Leeds.
"	9	Salford—Stores	Gas Committee	W. W. Woodward Engineer, Town Hall, Bloom Street, Salford.
"	10	Bath—Cast-iron Pipes	Waterworks Committee	W. Fox & R. A. Tatton, 5 Victoria Street, Westminster, S.W.
"	15	Amsterdam—Rails, &c.	Netherland Minister for Colonies	Mart. Nijhoff, Bookseller, 18 Nobelstraat, The Hague.

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Miscellaneous.

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NOTE.—Advertisements for this page must reach the Office not later than 5 o'clock p.m. on Monday.

Complete List of Contracts Open—*continued.*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	PAINTING AND PLUMBING:		
July 2	Cork—Plumbing and Gasfitting Materials, &c.	Corporation	City Engineer, Municipal Buildings, Cork.
„ 4	Aberdeen—Painting Bridge	Ellon District Committee	F. Philip, Road Surveyor, Ellon
„ 6	Featherstone, Yorks - Painting W.I. Reservoir	Waterworks Committee	F. B. Rothera, Surveyor, Urban Dist. Council Offices, Featherstone.
„ 6	London, W.—Paints, Oils, &c.	Ealing Town Council	C. Jones, Borough Surveyor, Town Hall, Ealing, W.
„ 7	London, N.—Repairs and Painting at Baths	Islington Borough Council	J. P. Barber Borough Engineer, Town Hall, Upper Street, N.
„ 7	Norwich—Painting, &c., at Hospital	——	A. E. Collins, City Engineer, Guildhall, Norwich.
„ 9	Leeds—Painting, Cleansing, &c., Library	Corporation	City Engineer, Municipal Buildings, Leeds.
„ 9	Salford—Paints Brushes, Lead Pipe, &c...	Gas Committee	W. W. Woodward, Engineer Town Hall, Bloom Street, Salford.
10	Durham—Whitewashing, &c.	School Board	J. Gibson. Clerk, The College, Durham.
„ 13	London. W.—Painting, Repairs, &c.	St. Marylebone Guardians	A. S. Snell, 22 Southampton Buildings, Chancery Lane, W.C
„ 17	Sheffield—Painting, Distempering and Alphalting	Corporation	J. F. Moss, Secretary, Education Committee, Leopold St., Sheffield.
	ROADS AND CARTAGE:		
July 2	Birstall, Yorks—Road	Oakwell Joint Hospital Board	W. and E. H. Middlebrook, Solicitors, Huddersfield Road, Birstall.
„ 2	Denholme, Yorks—Asphalting	School Board	G. H. Knowles, Architect, Old Bank Chambers, Keighley.
„ 2	Hebburn—Reconcreting Footpath	Urban District Council	W. Curry, Surveyor, Council's Offices, Hebburn.
„ 2	Hebburn—Paving, &c., Streets	Urban District Council	W. Curry, Surveyor, Council's Offices, Hebburn.
„ 2	Catterick, Yorks—Burial Ground	Parish Council	C. G. Croft Solicitor, Richmond, Yorks.
„ 3	Ashford, Kent—Kerbing, &c...	Urban District Council	W. Terrill. Surveyor, Ashford, Kent.
„ 3	Branksome, Dorset—350 tons Granite, &c.	Urban District Council	S. J. Newman, Council's Surveyor, Council Buildings, Branksome, Dorset
„ 4	Wirral, Chester—Road	Rural District Council	T. Davies, 33 Kingsland Road, Birkenhead.
„ 4	Harrow-on the-Hill—Materials	Urban District Council	J. P. Bennetts, Council's Surveyor, Harrow-on-the-Hill.
„ 4	Radcliffe, Lancs—Setts	Urban District Council	W. L. Rothwell, Engineer, Council Offices, Radcliffe.
„ 6	Larne, Ireland Footpath, &c.	Urban District Council	W. G. Younge Clerk, Town Hall, Larne.
„ 6	London, W.—Asphalt Paving	Paddington Guardians	E. B. B. Newton, Borough Surveyor, Town Hall, Paddington, W.
„ 6	London, W.—Making-up, &c., Roads	Paddington Borough Council	E. B. B. Newton, Borough Surveyor, Town Hall, Paddington, W
„ 6	London, W.—9 Vans and 12 Carts	Paddington Borough Council	E. B. B. Newton, Borough Surveyor, Town Hall, Paddington, W.
„ 6	London, W.—Granite	Ealing Town Council	C. Jones, Borough Surveyor, Town Hall, Ealing, W.
„ 6	Dorking—Making-up Road	Urban District Council	G. S. Matthews, Town Surveyor. 64 South Street, Dorking.
„ 7	London, E.C.—Brooms, &c.	Finsbury B.C.	Superintendent, 26 Wharf Road, City Road, N.
„ 7	Ashford, Kent—Granite	Rural District Council	A. Sims, Surveyor. Charing.
„ 7	Leith, Scotland—Paving	Provost, Magistrates and Council	Burgh Surveyor, Town Hall, Leith.
„ 7	Leyton, Essex—Making-up, &c., Private Streets	Urban District Council	W. Dawson. Surveyor, Town Hall, Leyton.
„ 7	Portslade-by-Sea, Sussex—Street Works	Urban District Council	T. Austen, Clerk. Council Office, Portslade-by-Sea.
„ 8	Ryton—Road Improvement Works	Urban District Council	J. P. Dalton, Engineer, Council Offices, Ryton.
„ 8	Bristol—Cemetery Extension Work	City Council	T. H. Yabbicom, 63 Queen Square, Bristol.
„ 8	Kingston-upon-Thames—Granite	Corporation	Borough Surveyor, Clattern House, Kingston-upon-Thames.
„ 9	Cheltenham—Wood-block Pavement	Corporation	J. S. Pickering, Borough Surveyor, Municipal Offices, Cheltenham.
„ 9	Cheltenham—Kerbs	Corporation	J. S. Pickering, Borough Surveyor, Municipal Offices, Cheltenham.
„ 9	Southend-on-Sea - Making-up Road	Corporation	E. J. Elford, Borough Surveyor, Southend-on-Sea.
„ 0	Halesworth, Suffolk - Granite	Urban District Council	C. H. White, Clerk, Halesworth, Suffolk.
„ 13	Hale, Cheshire—Making-up Road	Urban District Council	T. Blagburn, Surveyor. Council Offices, Ashley Road, Hale.
„ 13	Leamington—Road Stone	Corporation	Borough Surveyor, Town Hall Leamington.
„ 14	Barking, Essex—Making-up, &c., Roads	Urban District Council	C. F. Dawson. Surveyor Public Offices, Barking.
15	Northfleet, Kent Materials	Urban District Council	Surveyor Court House, Southend.
„ 15	Rochester—Materials	Corporation	W. Banks, City Surveyor, Rochester.
„ 15	London, W.—Remodelling Drainage, Paving &c.	St George's Union Guardians	E. T. Hall, 54 Bedford Square, W.C.
	SANITARY:		
July 2	Blaydon-on-Tyne—Scavenging	Urban District Council	R. Biggins, Sanitary Inspector, Council Offices, Blaydon-on-Tyne.
„ 3	Brighton—Drain Pipes	Corporation	F. J. C. May, Borough Engineer, Town Hall, Brighton.
„ 6	Perth—Sewers	Town Council	R. M'Killop, 12 Tay Street, Perth.
„ 6	London. W.—Disinfectants, Pipes, &c.	Ealing Town Council	C. Jones, Borough Surveyor, Town Hall, Ealing, W.
„ 7	Sheffield—Lime	United Gaslight Co.	H. Thomas, Manager, Offices, Commercial Street, Sheffield.
„ 8	Ashton-in-Makerfield—Sewer	Urban District Council	T. Burgess, Surveyor, Council Offices, Ashton-in-Makerfield.
„ 9	Swinton, Lancs—Sewers, &c.	Urban District Council	H. Entwistle, Surveyor, Council Offices, Swinton.
„ 10	Dringhouses, Yorks—Sewers	Bishopthorpe R.D.C.	Fairbank & Son, Engineers, Lendal Chambers, Lendal, Yorks.
„ 13	Hastings—Sewers	Corporation	P. H. Palmer, Borough Engineer, Town Hall, Hastings.
„ 14	Bingley, Yorks—Removal of Nightsoil, &c.	Urban District Council	T. W. Cragg Sanitary Inspector Wilsden.
„ 23	Trowbridge—Sewage-Disposal Works	Urban District Committee	W. H. Stanley, Engineer, Market House Chambers, Trowbridge
	TIMBER:		
July 9	Salford—Timber	Gas Committee	W. W. Woodward, Engineer, Bloom Street Salford.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
July 15	Newark-upon-Trent—Grammar School, &c.	£25, £15, £10.	——	G. Tallents, Clerk to Governors, Magnus Grammar School, Newark-upon-Trent.
„ 20	Taunton—Library	£30, £20, £10.	10s. 6d.	G. H. Kite, Town Clerk, Municipal Buildings, Taunton.
Sept. 12	Stonehaven, Scotland—Alterations and Additions to Town Hall.	——	——	G. Murdoch, Borough Surveyor, Stonehaven.
1904. Mar. 31	Vienna—Machinery to Lift Boats on Canal	100,000, 75,000 and 50,000 kronen.	——	Austro-Hungarian Consulate-General, 22 Laurence Pounteney Lane, E.C.

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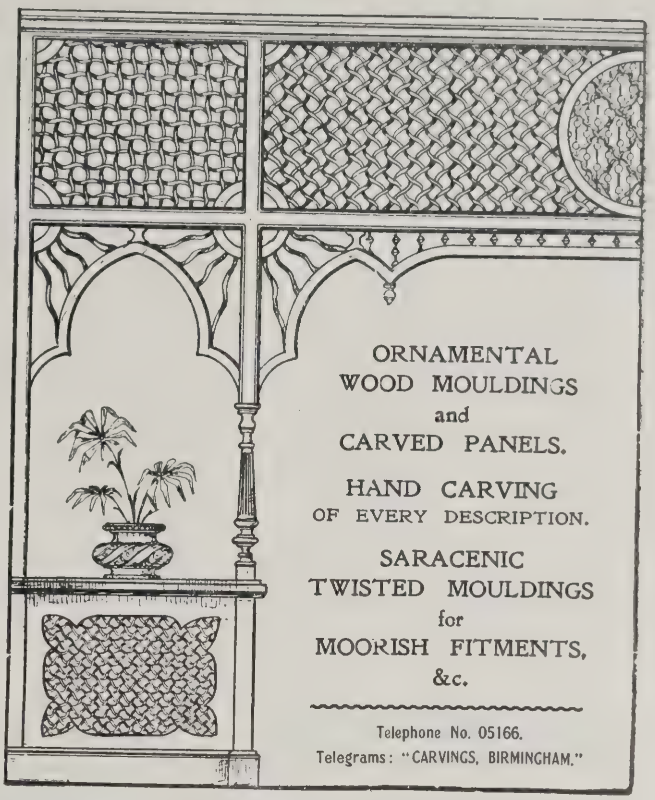

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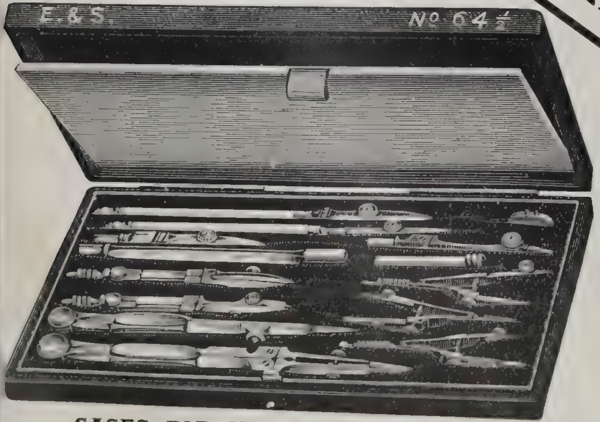

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TENDERS—*cont.*

Pwllheli (Wales).—For carrying out improvements and alterations to the Union Workhouse, for the Guardians. Mr. R. G. Thomas, architect, Menai Bridge:—

I. Evans, Menai Bridge	£1,315
J. H. Roberts	1.300
J. J. Jones, Portmadoc	1,297
J. & R. W. Jones	1,270
O. D. Jones, Portmadoc	1,213
J. Summers	1,191
Jones, Roberts & Thomas	1,172
P. Edwards, Pwllheli and Chester	1,145
W. Owen, Chwilog, Pwllheli	1,143
W. G. Evans,* Criccieth, North Wales	1 067

* Accepted. [Rest of Pwllheli.]

Stockport.—For the erection of a new infirmary at Stepping Hill, near Stockport, for the Guardians of Stockport Union. Mr. W. H. Ward, architect, Paradise Street, Birmingham:—

Moss & Sons, Loughborough	£46,110
Smith & Pitts, Birmingham	45.774
Byrom, Bury	44,600
S. & J. Whitehead, Oldham	41,500
Hoe	43,788
Longden & Son, Sheffield	43 450
Meadows	43.113
Wilcock & Co., Wolverhampton	42,775
Robinson & Sons, Hyde	44.699
Briggs	41,696
Gibbs, Birmingham	40.875
Pownall	40,160
Eadie*	39.980

* Accepted. [Rest of Stockport.]

[Architect's estimate £39.677.]

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination: C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

DURING THE WEEK ending June 27th fifteen failures in the building and timber trades in England and Wales were gazetted.

C. HENDERSON, monumental mason. R.O. June 17th.

C. S. TOPLIS, designer, Carlisle. Adj. June 20th.

L. MURRELL, builder, Bexhill. R.O. June 19th.

J. A. HOLLANDS, builder, Marlow. P.E., Aylesbury County Hall, July 6th, at 11.

S. HORSEY, builder and contractor, New Brompton, late of Bournemouth. Adj. June 16th.

T. OSBORNE, builder, Stoke Newington. R.O. June 15th.

S. SMITH, plumber, painter, glazier and decorator, Sedgley. R.O. and adj., June 15th.

J. A. HARRIS, builder, Ashley Down, Bristol. Liabilities expected to rank for dividend, £1,291; deficiency £893.

SNEAP & GITTINS, builders, Stapleford. R.O June 5th. First meeting, "Flying Horse" Hotel, Nottingham, July 2nd, at 12. P.E., Derby C.C., August 11th, at 11.

J. E. DYNE, builder, Willesden Green. R.O. June 19th. First meeting, Bankruptcy Court, July 7th, at 12. P.E., same, July 30th, at 12.

G. SPARROW, builder and contractor, Church Stretton. Adj. June 19th. Gross liabilities £3,711; expected to rank for dividend, £567; assets £341.

C. HARRIS, builder, London, Sandhurst and Wimbledon. First meeting, Bankruptcy Court, July 6th, at 11. P.E., same, July 30th, at 11.

J. PYETT & SONS, builders and house decorators, Anerley. Adj. June 12th. P.E., Croydon C.C., July 22nd, at 11.

R. WADDINGTON, joiner, Barobridge. R.O. and adj. June 17th. First meeting, O.R.'s, York, July 1st, at 1.30. P.E., York Courts of Justice, July 3rd, at 11.

H. C. NUNN, builder, Cherry Hinton, Cambridge. Gross liabilities £4,610; £1,398 expected to rank for dividend; assets £358; deficiency £1,040

S. Y. BROCK & SON, builders, Alburgh, Norfolk. £2,160 due to eighty-nine unsecured creditors; assets £742; deficiency £1,418.

R. D. DANIEL, tar pavior and contractor, East Acton. R.O. June 16th. First meeting, O.R.'s, 14, Bedford Row, W.C., July 1st, at 12. P.E., Brentford Town Hall, July 3rd, at 12.

C. PORTER, brickmaker and building estate proprietor, Norwich and Lowestoft. R.O. and adj. June 16th. First meeting, O.R.'s, Norwich, July 3rd, at 3.30. P.E., Norwich Shirehall, July 22nd, at 11.

B. F. HOLMAN, painter and plumber, Carlton Colville. R.O. and adj. June 16th. First meeting, O.R.'s, Norwich, July 3rd, at 12.30. P.E., Yarmouth Town Hall, July 21st, at 18.

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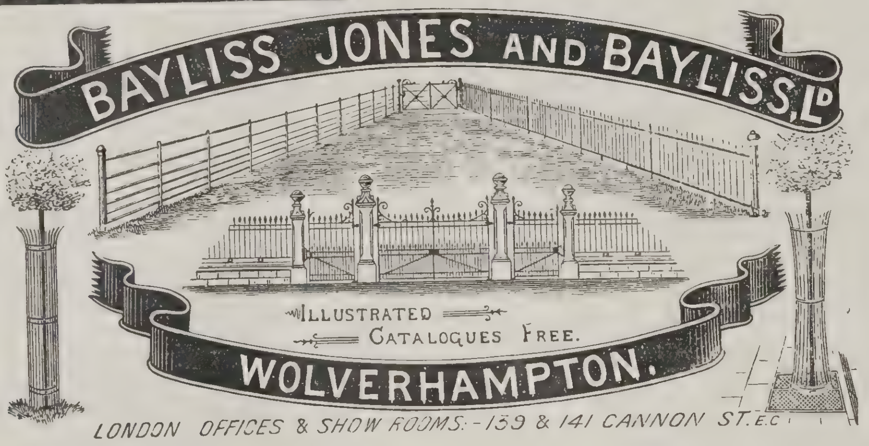
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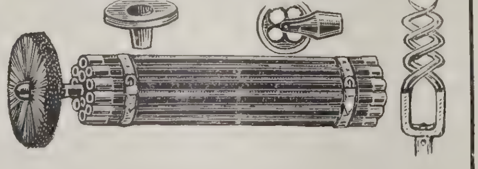

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THE

BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

July 8, 1903. Vol. 17, No. 439. 9, East Harding Street, E.C.

Technical Education. The past week has been noticeable for two important proposals, namely, the establishment of two institutions to give technical education in branches of applied science superior to that at present offered in any public college in this country, one modelled on the lines of the famous Technical High School at Berlin in the suburb of Charlottenburg, and the other a school of metallurgy and metallurgical research as a memorial to the late Sir Henry Bessemer. There is no reason why these two schools should clash; the metallurgical school can very well serve as a department of the other, but while the former is wholly praiseworthy in object, there are certain questions which throw doubt upon the great advantages which it is generally accepted must accrue from the establishment of a technological institute on the lines of that at Charlottenburg. The proposal has been referred to the General Purposes Committee in conjunction with the Technical Education Board of the London County Council for their consideration, and we may expect this body, which has already done so much for London in the way of technical education, to thoroughly thrash out the subject and afford conclusive evidence of the best course to pursue. It is an unfortunate fact that technical education in this country has been pushed by persons who have had no experience of trade and who never seem to grasp the facts. We have seen numerous technical institutes established without any scheme, primarily with the idea of educating the public in branches of knowledge that apply in trade, and yet generally any pupils that offer themselves, whether they have had a proper foundation in elementary knowledge or not, are given tuition. The teachers' acquaintance with the subjects is often only book knowledge, and they aim at cramming the pupils through some examination set by men almost as impractical as themselves. This seems the natural effect of leaving education in the hands of the ordinary teacher, who secures advancement according to the number of pupils he manages to cram through the examinations. The examination system is one of the chief curses of technical education in this country. When a youth goes into a business firm he is not examined every few months, but his general progress is judged by his teachers, *i.e.* his principals, who are continually in touch with him and know his real abilities and progress, without being misled by any peculiarities of his own individuality or the little accidental features which have so much to do with the position one secures in an examination list. In business a youth acquires knowledge by practical experience, and the result is that he is not crammed with facts he but half understands and soon forgets. In any scheme of technical education which is to be of real and lasting benefit to trade, the colleges must be run on the same lines in these respects as a business firm, and the student should be allowed very great freedom in the choice of his own procedure in the study of any subject. This principle of free choice is adopted to a great extent at our universities, and is one of the special features at Charlottenburg, but is not even there carried so far as it might be. We would not have any set examinations in the suggested higher technical college, but leave the granting of diplomas to other bodies, such as the Royal Institute of British Architects, the Institution of Civil Engineers, &c. If this course were pursued our manufacturers and professional men would undoubtedly be more ready to engage young students from our technical colleges at good salaries, instead of offering the paltry remuneration they find their services are worth under present conditions of training. If their services were more valuable to our manufacturers, we have no doubt higher salaries would be paid than the £120 to £300 a year, which is what students from Charlottenburg can be obtained at. The parents and guardians would then find it worth while to pay adequate fees to make self-supporting such an institution as Lord Rosebery suggests, just as they are at present prepared to pay heavy fees to article their charges to professional men, architects and engineers. The London ratepayers ought not to be called upon to contribute £20,000 a year to support this proposed institution—it is neither right on economic grounds, nor is it just that one city should sow alone what the Empire will reap. Such a state of affairs as at present exists not only in this country but in Germany, notwithstanding its boasted excellence, proves that somewhere things are radically wrong. Lord Rosebery does not suggest that architecture shall be one of the subjects dealt with at this Central College of Applied Science, as is the case at the Charlottenburg College of which he is so much enamoured. This is wise, because the Architectural Association has already taken the matter in hand with its day and evening schools, and furthermore the Royal College of Science has recently come forward, under Mr. Beresford Pite and Mr. W. R. Lethaby, with a comprehensive scheme that promises well, while with Prof. F. M. Simpson at University College, London, and reform in the Royal Academy Architectural School, great improvements are taking place all round. But we see many directions in which such a School of Science as is suggested could, if conducted properly, be of very great service to architecture and the building trades. The subjects with which Lord Rosebery thinks it might deal are chemical technology, mining and metallurgy, electro-chemistry, electric traction, optical technology, bacteriology, railway and marine engineering, hydraulics and naval architecture. These subjects are of course chiefly connected with the engineering professions and trades, but there are many portions of them which apply to the building crafts, and we see no reason why students of building construction should not attend certain of the lectures. With bacteriology there might very well be combined sanitary engineering, which would have a very direct connection with architects, plumbers, &c.

The Statue of James the Second. THE removal of the statue of James the Second from its original position at the rear of the Banqueting House in Whitehall, and its subsequent disappearance, are matters for regret to every lover of the arts. There are so few statues in the metropolis of which we have reason to be proud, and the withdrawal of this one from the public gaze is a distinct loss to art. The tale goes that the King was desirous of removing the statue to Windsor Castle, but this project was opposed by Lord Windsor, the First Commissioner of Works, who has not yet made up his mind as to its future position. The quadrangle in the front of the Admiralty has been suggested as a suitable site, James, when Duke of York, having been First Lord of the Admiralty, as readers of Pepys's Diary may remember. This appears to be a plausible reason, but it would be preferable to restore the statue to the site for which it was originally designed. It is lamentable that our works of arts should be moved about, like pawns on a chess-board, at the caprice of the Sovereign. George the Fourth proposed in 1827 to remove the roof of King John's Palace to Eltham, and instructed Sir Jeffrey Wyattville to report as to the practicability of doing so, but on receiving an adverse report the King fortunately desisted and the roof has come down to us in its integrity. In any other country but England the palaces at Eltham and Bromley-by-Bow would have been scheduled as historical buildings and placed under proper supervision.

S.K. EXAMINATIONS, 1903.

BUILDING CONSTRUCTION:

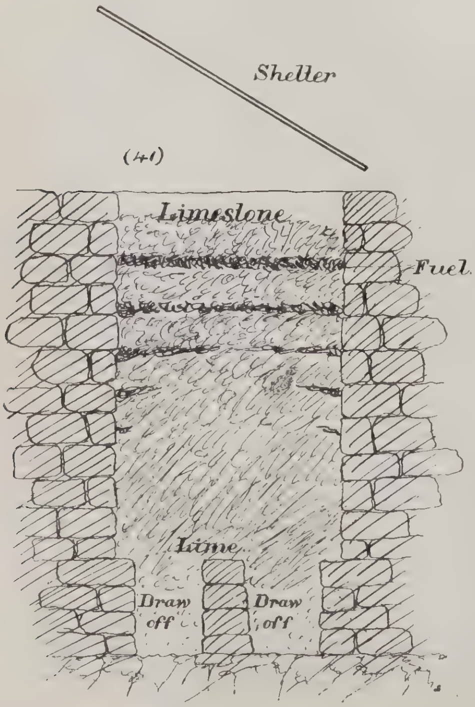
Honours, Part I.

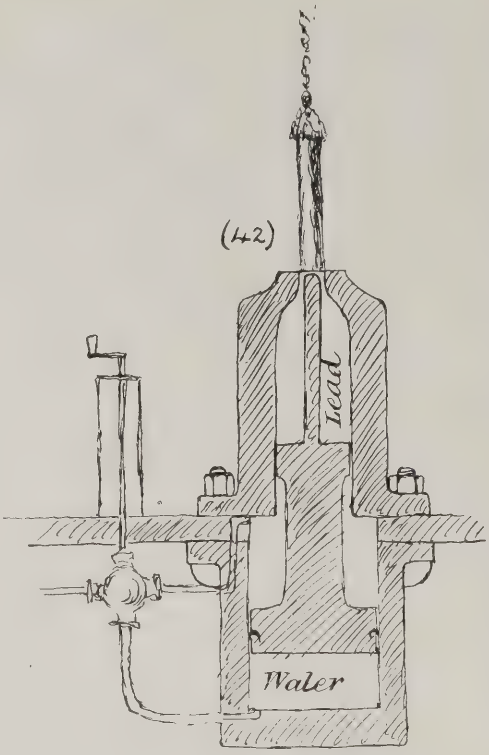
[Answers to questions set in the Elementary examination were given in our issue for May 20th and in the Advanced in our issue for May 27th last.—The examination lasts four hours. You may not answer more than six questions, of which at least one must be selected from each of the first two divisions and two from the last. The tracing must be attempted. Sketches and answers may be on the squared paper which is attached to the drawing paper. Additional foolscap may be obtained from the superintendents of the examination. The tracing should be drawn on the tracing paper attached to the drawing paper. The drawings, in answer to questions 44 and 50, should be on the drawing paper; they may be in pencil.]

Division I.

41. (*a*) Describe a limekiln — illustrate with sketches. Describe the preparation of limestone for burning. (*b*) Given Ca 40, O 16, C 12: what weight of lime should result from a charge of 4 tons of limestone? The weight of limestone is made up of 3·424 tons of $CaCO_3$ + ·4 ton of a substance not altered in weight by the burning, + ·176 ton of water which is driven off. (*c*) How many cwt. of coals (approximately) are required to burn 4 tons of limestone to lime? (51)

(*a*) The duty of a limekiln is to provide a suitable chamber in which limestone can be economically heated to the temperature at which carbonic acid gas (carbonic anhydride, CO_2) dissociates from lime (calcium oxide, CaO); it must also provide for the carrying away of the carbonic acid from the lime, because if they cooled in presence of one another they would recombine into limestone; there must therefore be a moderate draught through a limekiln. Where there is a demand for large quantities, probably the most economical form of kiln for lime-burning is the Hoffman kiln. The varieties of limekilns very much depend upon the local circumstances, nature of available fuel, demand for lime, character of the limestone, &c. A common form is a cylindrical pit, lined with the best fire-resisting substance available at the place (firebricks or some kinds of sandstone or trap stones), formed against the side of a small hill. Limestone and fuel are added in layers at the top from time to time, and lime removed from time to time from a draw-hole below (see sketch). The limestone is broken into convenient-sized fragments: chalk limestone to pieces 10in. in diameter and smaller; compact mountain limestone (carboniferous) to 3in. or 4in. fragments. If the stone is very dry it may be well to slightly sprinkle it with water.





(*b*) 44 per cent. of 3·424 + ·176 water is driven off = 1·68; 4 − 1·68 = 2·32 tons of lime.

(*c*) With the kiln described above, the weight of good coals or coke required may be taken to be about $\frac{1}{8}$th of the weight of the limestone; for 4 tons, 10 cwt. In a Hoffman kiln the quantity of fuel required is much less.

Note.—A student would not be expected to write as much as is here given in answer to (*a*). A short description of a practical limekiln that he has seen would be quite enough. Long rigmarole answers remembered from books commencing "Limekilns are of two kinds, flare-kilns and tunnel-kilns," &c., if they are accurate, may get full marks, but they are not good answers. What a student reads in a book he should assimilate; he should be unable to repeat it exactly as he read it.

42. Describe exactly the manufacture of lead pipes for plumbers' work. Illustrate your description with sketches. (45)

Lead pipes are squirted—that is, the lead is forced by pressure through an opening of the proper size to form the external surface of the pipe. In this opening is placed a core to form the bore of the pipe; the core is held in position sometimes by thin knife-like arms attached to it and to the opening. These arms divide the lead as it is pressed through the opening, but the lead re-unites at the other side owing to the great pressure, and also because the torn surfaces have no opportunity of oxidizing while they are apart.

In some cases the core is not attached to the opening, but moves up through it as shown in the sketch. The arrangement sketched is better suited to large pipes than to small pipes, because a large core is rigid—keeps its place well, so that the pipes are squirted truly of the same thickness all round a cross-section.

Lead is melted in a suitable melting pot or furnace; it is poured from ladles into the lead chamber, where it solidifies. Hydraulic pressure is applied by means of a powerful pump to the bottom of the compound piston, which is thus forced upwards, squirting the pipe through the opening. Large section-pipes are carried straight up, supported by a cord or chain, which has a heavy balance weight attached to its other end and passing over a pulley above. Smaller pipes are guided over rollers to reels, on which they are wound as they come from the presses. There are many obvious varieties of squirting presses: in some the pressure is downwards, and the supply of lead runs direct from the furnace into the squirting cylinder; not through the pipe opening, but through a special opening, which is uncovered when the piston is up in the position to commence its downward stroke.

Note.—Notwithstanding the commonness of the operation of squirting plumbers' pipes, and the covering with lead of insulated copper cables for electrical purposes, if a student tries to get information on the subject from books he will find that these operations are not described in books at all. Useful information of this kind, naturally, has not found its way into books up to the present, mainly because the workman feels apart from books as practical helps. It is to be hoped that, as a result of the development of what is now so much talked about under the somewhat vague title of "technical education," the workman physicist will become less dumb and that in the future he will more freely tell his fellow workmen—and the possibly more ignorant persons he conceives to be his betters—about his friends, the materials with whom he passes his working day.

43. Describe carefully the preparation of plaster-of-Paris. In what respects does plaster-of-Paris differ from the gypsum from which it is made? (45)

The fragments of gypsum are cleaned by picking and chipping off dirty and stained portions; the cleaned fragments are pulverized and ground fine; the gypsum is then placed in cast-iron pans which are heated from beneath; it is kept stirred in the pans; after about three hours (if the proper temperature is maintained) it should be sufficiently "boiled." When the gypsum is ovened before grinding it forms what is called "baked" plaster.

Gypsum is a compound of calcium, sulphur, oxygen and water. We can conceive the compound divided into three parts; the calcium, sulphur and oxygen forming one part, and two separate portions of water. When gypsum is just heated sufficiently to drive off one portion of water it has become plaster-of-Paris. It is now ready, if the opportunity is offered, to recombine with a fresh portion of water, and in so combining its particles will unite together; the substance sets, forming a cohering solid. It will not do to continue to raise the heat till all the water is driven off; gypsum so treated becomes an anhydrous substance $CaSO_4$, which does not behave like plaster-of-Paris. To make good plaster, just the proper quantity of water must be driven off by heat.

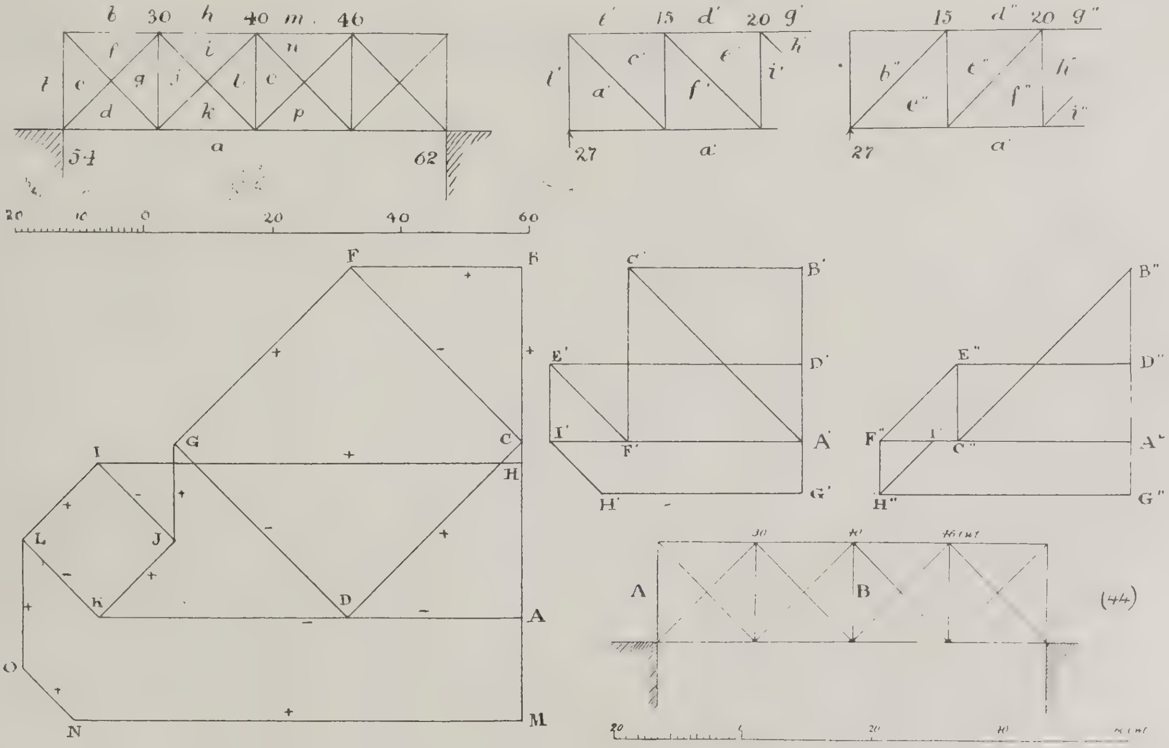
Division II.

*44. It is assumed that the girder shown may be separated into two determinate girders, placed side by side, and the load also divided and placed equally on the two girders. When thus loaded and stressed the two girders may be recombined without alteration in the stresses. On this supposition find graphically the stresses in the members of the girder loaded as shown. (Full marks will be given for an accurate continuous diagram which will include all the joints between A and B.) (51)

See accompanying diagrams.

To find the weight on each support take moments about the right-hand point of support, using a bay as unit of length. $\frac{46+80+90}{4} = 54$; the weight sustained by the right-hand support is 62.

Note.—It would be absurd in this case to draw a funicular or linked polygon. Some of the work shown on the past diagrams might be omitted by a candidate; I have drawn them fully so as to be clear to students. A question like this was recently worked in THE BUILDERS' JOURNAL. Students who had carefully studied the articles contributed by me to this Journal would have no difficulty with any one of the three "strength" questions in Division II. I will venture to say that if students carefully make themselves familiar with the building mechanics of those articles, they will be able to work fully any such questions which are likely to be set in these examinations, and they will be prepared for most mechanics' questions likely to arise when they come to practise. The sign — marks tension, + marks compression.



45. The reservoir (for distribution) of the waterworks of a small town is a circular cylinder 30ft. high and 20ft. in diameter. When the cylinder is full of water, what is the tensional stress in a ring of the cylinder 1ft. wide (or deep) whose centre line is at the height of 1ft. 6in. from the bottom? What should be the thickness of iron plate to safely sustain this stress? (51)

The pressure per sq. ft. at the centre of the ring is $28{\cdot}5 \times 62{\cdot}5 = 1781{\cdot}25$ lbs. The pressure at a diameter, forcing two halves of the ring apart, is 20 times this, because the projection of a half hoop on the diameter is 20 sq. ft. This pressure is resisted by the hoop at two places (the extremities of the diameter taken), so that one section of hoop has to resist half the total amount, or $17812{\cdot}5$ lbs. If we assume that we shall stress the iron to 4 tons per sq. in., $4 \times 2240 = 8960$. $\frac{17812{\cdot}5}{8960} = 2$ nearly; that is, 2 sq. in. of iron would be sufficient to bear the stress. But the plate is 12in. deep, it therefore may be $\frac{2}{12}$ or $\frac{1}{6}$in. thick.

This is the easiest question on the paper.

*46. A mild steel joist, of the cross-section shown, rests horizontally on two supports, one at each end, having its web vertical; it is 40ft. long:—

(*a*) Given

$$\Delta = \frac{5}{384}\,\frac{WL^3}{EI},\ E = 30{,}000{,}000 \text{ (lb.-in.)},$$

$$I = \frac{bd^3 - b_1d_1^3}{12},$$

find Δ in inches. (Rounded angles taken as not rounded; take the average thickness of flanges.)

(*b*) What is the maximum stress in lbs. per sq. in. upon the steel at the cross-section of greatest bending moment? (51)

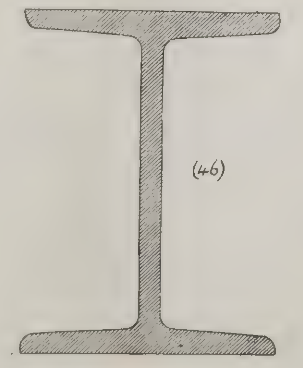
Area of cross-section = $9{\cdot}5$ sq. in. $W =$ 1,266 lbs.

$$(a)\quad \Delta = \frac{5 \times 1266 \times 480^3}{384 \times 3(10)^7 \times I} = \frac{60{\cdot}7}{I} = {\cdot}614\text{in.}$$

$$I = \frac{6 \times 8^3 - 5{\cdot}5 \times 7^3}{12} = 98{\cdot}83.$$

(*b*) The bending moment at the centre of the joist is $\frac{1266}{4} \times 240 = 75960$ (lb.-in.); this is resisted by $\frac{2Ip}{d}$, where p is the stress per sq. in on the extreme fibres $\therefore p = \frac{d\,75960}{2I}$ $= \frac{8 \times 75960}{2 \times 98{\cdot}83} = 3074$ lbs. per sq. in.

Note.—The first part of this question is mere arithmetic; the second part involves the recollection of what is called the strength modulus (or formula) of the section. This a student should remember, and he should be able to work it out, to check his recollection. The working out involves nothing higher than arithmetical progression (the sum of the squares of the first *n* natural numbers.).



DIVISION III.

*47. The drawing (see next page) shows a vertical section through a diameter of a circular concrete and masonry reservoir; the flat cover is supported upon cast-iron pillars 6in. in diameter, metal $\frac{3}{4}$in. thick; square flanges on their ends, 12in. by 12in., $\frac{7}{8}$in. thick (the pillars are not shown on the drawing, they are thirty-four in number). Find accurately (*a*) the quantity of masonry and concrete combined; (*b*) the quantity of water in gallons that the reservoir will hold when the water surface is within 6in. of the roof; (*c*) the weight of iron in the pillars; (*d*) the quantity of surface to be floated and trowelled smooth; (*e*) draw up an estimate of the cost of this reservoir (omit standpipe, overflow and wash-out, but include manhole and foot irons). (51)

$$(a)\quad 82^2 \times 14\frac{\pi}{4} - 70^2 \times 11 \times \frac{\pi}{4} - 79\frac{4{\cdot}5 \times 11}{2}\pi$$
$= 25{,}459$ cub. ft. = 943 cub. yds.

Note.—First, I take the whole as if it were a big cheese; the second term deducts the interior; the third term deducts the outside ring of triangular cross-section which is cut off by the batter. I find the area of this triangle to be $\frac{4{\cdot}5 \times 11}{2}$, and I find the distance of its centre of gravity from the centre to be $39{\cdot}5$ft., *i.e.*, the diameter of the path of its centre of gravity is 79ft.; its path is therefore 79π, and by Guldin's theorem its volume is as given above. This is much the easiest way to take the quantity.

(*b*) $70^2 \times 10{\cdot}5\frac{\pi}{4} - 70 = 40339$ cub. ft. = 252,119 gals.

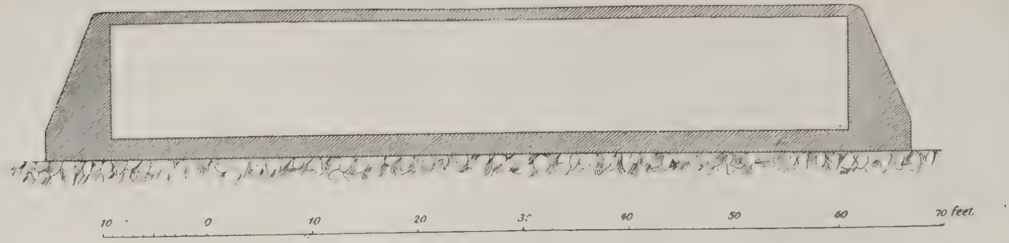
Note.—70 is the volume of wetted pillars; each pillar is 28in. cross-section; $10\frac{1}{2}$ft. of this cross-section are very nearly 2 cub. ft. (extra for foot flanges neglected).

$$(c)\quad \frac{36 - 20{\cdot}25}{144}\frac{\pi}{4}\,11 + \frac{144 - 36\frac{\pi}{4}}{1728} \times \frac{7}{4} = 1{\cdot}125$$

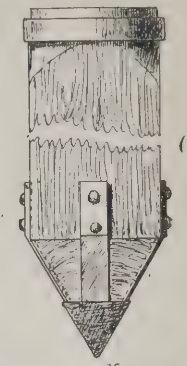
cub ft. iron in each pillar, say 513lbs. each, say 8 tons in 34 pillars (allowing filleting).

(*d*) $2 \times 35^2\pi + 36{\cdot}5^2\pi + 70 \times 11\pi + 76 \times 12\pi + 82 \times 3\pi = 17940$ sq. ft., or, say, 2,000 sq. yds.

Note.—First term gives floor and roof inside, second term top surface, third term

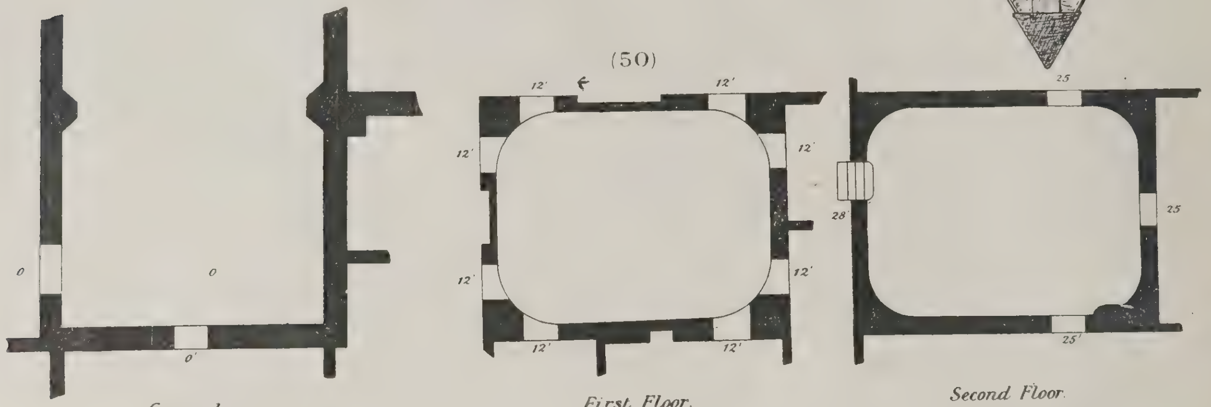


Scale, (47) *and* (50)



(51)

(50)



Ground. *First Floor.* *Second Floor.*

vertical wall inside, fourth term sloping face, fifth term vertical outside face.

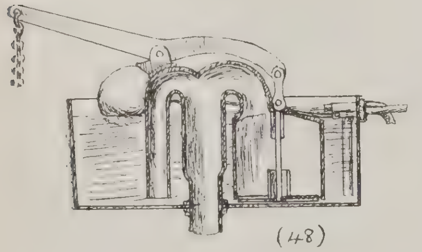
(*e*) ·943 cub. yds. concrete and masonry at £1 -	£943 0 0
2,000 sq. yds. face floating at 1s. - -	100 0 0
8 tons cast-iron pillars at £7 - - - -	56 0 0
Manhole and foot irons	3 10 0
	£1,102 10 0

Note.—Manhole opening not deducted from concrete.

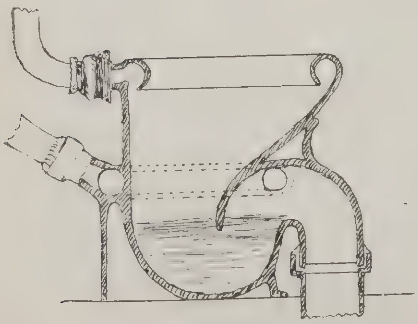
48. Sketch to the scale of about $\frac{1}{8}$ a vertical section to show the parts of a first-class washdown water-closet. Show the connection with the soil-pipe; show the flushing tank and explain its parts and mechanism; show particularly the connections of the porcelain with the metal piping. (51)

See accompanying illustrations.

There is some variety in flushing tanks. The common principle is to start a syphon, which will empty the contents of the tank down the flushing pipe into the closet as quickly as may be necessary to cleanse it. The advantage of a syphon over a common lift-up valve is: first, the discharge is completed with one pull at the chain (with a lift-up valve it would need to be held open during the whole time); second, the syphon is less likely to leak down the flushing pipe than a lift-up valve. The flushing tank shown is fitted with a ball valve whose delivery pipe reaches to near the bottom of the tank; this is to prevent a hissing splashing noise when the tank is refilling. When the tank is full the ball rises and shuts off the supply; there is an overflow pipe which is ready to act in case the ball valve fails to shut off the supply when the tank is full. This overflow pipe may be carried to the outside of the building, to a lavatory waste, or connected to the flushing pipe some distance down the wall (if connected near the top it interferes with the syphon action), or it may discharge independently into the closet basin. It is advisable to have its discharge noticeable, so as to call attention to the defective ball-valve.



(48)



In the form of syphon tank shown a pull upon the chain raises the piston in the cylinder; this forces the water in the cylinder over the bend of the syphon; this starts the syphon, which empties the tank.

The *weak* point in closets hitherto is the connection between the porcelain and the metal soil pipe. An arrangement may show very great care—indeed, excessive care everywhere but at this joint, which we may find made with some compound of white lead or glazier's putty stuck against a damp porcelain surface, an absolutely unreliable joint. A joint can now be made called metallo-keramic, which is a perfectly tight joint to the porcelain.

The connection between the flushing pipe and the closet basin is not sanitarily important; it is only necessary to have it fairly water-tight. This joint is usually made with white lead and gaskin, secured outside with indiarubber tied on with copper wire.

49. Give careful instructions; give dimensions; make sketches of parts; specify particularly the materials; for a good ordinary pattern house-painter's ladder 30ft. long. How much should it cost? (45)

See accompanying illustration. The drawing shows the two bottom rungs and a cross-section of the ladder; an iron tie is also shown. The tie is shown screwed for a nut at one end; some painters prefer to rivet the tie so that there shall be no projecting nut. It is advisable to keep the ties fairly close to rungs; this brings the hole bored for the tie close to the hole bored for the rung, and this makes it advisable to have the tie ends or washers as shown with points turned down to penetrate the wood of the ladder sides.

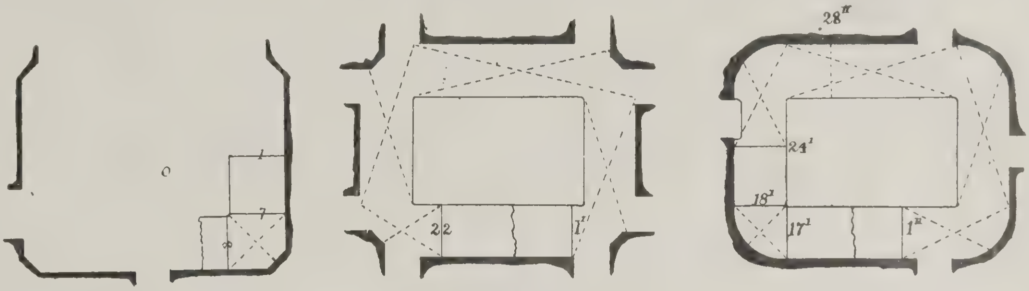
It is common to bore the holes for the rungs taper; the sketch does not show them so. If rungs are wedged the taper makes the wedging less efficient. It is usual to shape the rungs thicker in the middle than at the ends; the sketch shows them of uniform thickness and shouldered against the sides. The rungs are shown not circular in section, and having a greater shoulder at top than bottom; this is done to provide for the wear from feet going up and down. Ladder rungs wear next the sides. A man does not go up a ladder placing his feet on the centres of the rungs.

A strong active house-painter is able to butt a 30ft. ladder against a wall and raise it himself without assistance; he can also work with it up. Resting it against his shoulder he can walk with it balancing. The ladder ought not to be too heavy for a man to do this with it. Unlike other workmen, house-painters are continually moving their ladders; they use them without much slope, and there is very little bending moment. The sides shown in the sketch are rather too heavy; they should be 1in. less in depth and $\frac{1}{2}$in. less in thickness at the top; 3in. by $1\frac{3}{4}$in. should be enough. The rungs should be all of the same length, 11in. between the ladder sides; the top rungs may be lighter than the bottom rungs, as they get less wear.

Choose a good straight and straight-grained Norway spruce spar; have it carefully and truly sawn up the centre; have it cleaned to the proper taper and cross-section everywhere: place the two dressed halves together and fix them; mark for holes 10in. apart; have them bored truly parallel without twist at right angles to the axis; the holes should be 1in. full and should be slightly tapered from the outside to make the wedging hold. The rungs should be of good well-seasoned oak; it is quite common to make them of good sound old spokes: they should be dressed to the proper shape between sides cut to the proper length over-all, and the ends should be turned to fit the holes: the sides of the turned parts should be dressed, eased with a chisel, so that in driving they will not tend to split the sides: they should be cut with a fine saw for the wedges. There should be four iron ties like that shown. The rungs should be driven with good white-lead paint wedged with oak wedges, also driven with paint and the sides cleaned off. The ties should now be put in, screwed up fast, and the overlength of screwed end cut off with a hack saw and smoothed with a file. The ladder sides should now get three coats of good white-lead paint: it is not necessary to paint the rungs.

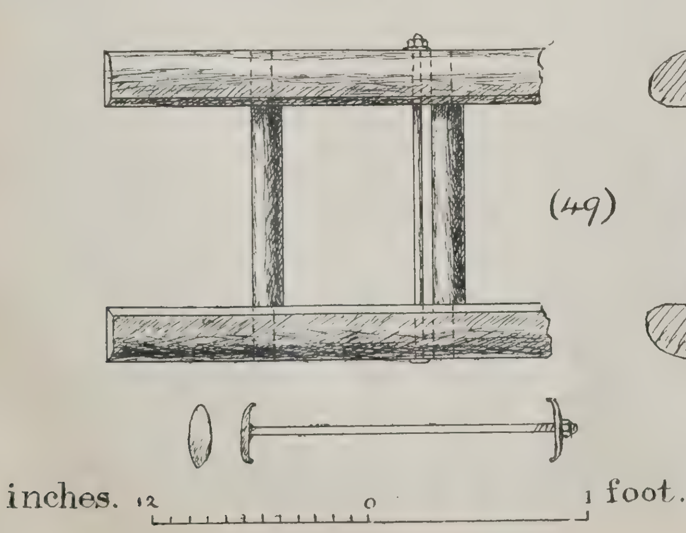
*50. The drawings show the ground floor and the first and second floors of a building and the doors opening into a central well; there is a third floor having three doors exactly over the three doors marked 25ft. on the second-floor plan. Design stairs and landings for these floors. The height of the third floor is 40ft.; winders are not allowed; it will be sufficient to show the risers of bottom steps and top steps at landings, &c., and to give the number of intermediate risers; landings should be marked distinctively with two diagonal lines. The heights over ground of the different floors are marked on the plans:—Ground floor 0 ft., first floor 12ft., second floor 25ft. and 28ft. (the risers are shown from the 25ft level to 28ft. level). (51)

See accompanying illustrations.



Ground. First Floor Second Floor. (50)

Commencing on the ground floor at 1, the first riser, we have 7 risers to the first landing; a total of 22 risers to get up 12ft. gives landing space at the doors on the first floor. It will be found that we have head-room on the stairs to place our first riser, 1_1, from the first floor, as shown. But there is not much to spare, and it is a question whether it is not advisable to put 22 risers, the distance of 1 going nearer to the door. It is, however, not comfortable to having a downward riser close to a door, and so the stairs are placed as shown. We have 24 steps to rise 13ft.: from 1_1 (first-floor plan) to 24_1 (second-floor plan) this is just manageable as shown, owing to it being necessary to have riser 24_1 before reaching the steps shown as rising to a floor to the right at a height of 28ft. from the ground. We have to rise from the second-floor to the third floor, 15ft.: this is done with 28 risers. We can afford a little more space between the door and the first riser, 1_{11}, and we give it: it will be found that we finish at 28_{11} as shown, providing two quadrant landings. The going is uniform and the height of riser fairly uniform.



(49)

51. (*a*) Sketch to the scale of $\frac{1}{8}$ the head and point of a 12in. by 12in. timber pile prepared for driving. (*b*) What do you know of the pressure between the base of the monkey and the head of the pile after impact? (*c*) If a monkey weighing 8 cwt. falls 7ft. to the head of a pile and drives the pile 1ft., what is the effective average pressure on the head of the pile during its motion? (*d*) If the pile is driven only a very short distance (or is not noticeably moved) can you estimate the force or pressure? (*e*) In general terms, compare the effect of the stroke of a monkey of, say, 4 cwt. falling 14ft. with that of the monkey and fall given above. (51)

(*a*) I make the hoop for the head of the pile fairly large. It is probably most usual to shoe the point, having the straps fastened to the casting with bolts. If, however, the piles are uniform 12in. by 12in., and a large number to be driven, it may be worth while to have the straps let into the casting as shown.

(*b*) The monkey has kinetic energy of a known quantity (neglecting friction in the guides, &c.) just before meeting the head of the pile, and we know that this energy can only be delivered up in opposing a pressure through a distance. During the time that the monkey is coming to rest the pressure is changing: if we imagine very short equal intervals of time, each having its special pressure, then if each pressure is multiplied by the distance moved by the monkey in that infinitely short interval, the sum of all these products will be equal to the energy in the monkey. This energy is partly transmitted to the pile and delivered by it to the soil at its point and sides, and it partly heats the pile and the monkey.

(*c*) A monkey weighing 8 cwt. falling 7ft. has just before striking the head of the pile 56ft.-cwt. of energy, but before coming to rest it falls a further foot; the energy we have to do with is therefore 64ft.-cwt. The constant opposing force which would bring it to rest in the distance of 1ft. would be a force of 64 cwt., and this may be taken to be the average pressure. Owing to the imperfect elasticity of the monkey and the pile, and the mass of the pile, the *effective* average pressure is always less than the average pressure at the head, though it is frequently taken to be the same.

(*d*) When the pile is not noticeably moved the effective pressure is nought, though the average pressure is very great; such a blow very seriously tries the strength of the material of the pile; if we assume that the deformation of the monkey is very small compared with that of the pile, it would be possible to measure the short distance through which the head of the pile moved downwards during the period of impact, and in this way an estimate might be made of the average pressure: it is $\frac{\text{Energy ft. lbs.}}{\text{distance.}}$

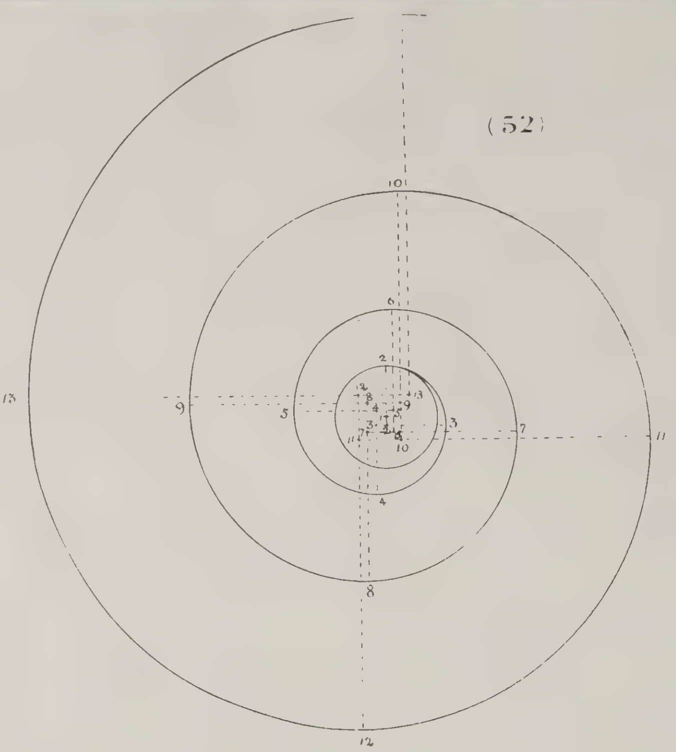
(*e*) There is some difficulty in getting exact notions of the two different qualities of a moving mass—(1) its momentum and (2) its kinetic energy. Momentum is produced by the action of force during time, kinetic energy by force through a distance. Neglecting any further falling of the monkey after impact, there is exactly the same quantity of kinetic energy delivered, if we assume that there is no rebound of the monkey, to the pile by each of the two monkeys; the momenta are however different:—

$$\frac{\text{The momentum of first monkey}}{\text{The momentum of second monkey}} = \frac{\sqrt{7}}{\sqrt{14}}$$

$= \frac{1}{\sqrt{2}} = \frac{5}{7}$ approximately. If we imagine the pile to be a free body and that the monkey strikes it without rebound, the momentum of the combined monkey and pile is the same as that of the monkey before impact, but if we figure it out we shall find that the energy is very different; a very considerable quantity of energy has disappeared; this energy has been converted into heat in the head of the pile, and the head of the pile may have been bruised and damaged. It is not at the head but at the point of the pile that we want the energy made use of; it is the remaining energy which is effective at the point of the pile. We shall find on trial, assuming different weights of monkeys and piles, that this balance of energy usefully available at the point of the pile is always greater the lower we keep the momentum of the monkey relatively to its kinetic energy at impact. A heavy monkey, with a short drop, is more efficient than a light monkey with a long drop.

*52. Trace, in ink, the Ionic volute curve shown (see next page) and the words "Ionic volute." (This curve is a series of quadrants of circles: it is important—for full marks—that the line shall be uniform and that no points of junction shall show.) (45)

The tracing of this curve is a sharp test of neatness and accuracy in handling drawing instruments. The first thing to be done is to find the centres from which the quadrants are drawn: the centre of the complete circle is easily found; we have not the exact point where the spiral springs from this circle; we know from the question that there is a complete quadrant all of the same curvature. From this we find the radius and the centre by trial, trying with the pencil point in the compasses; the line joining the centres should pass through the exact point of tangence; we are helped to adjust this line of centres when we try the curve past the point of tangence to the left in pencil. If we start fair with the first quadrant, knowing that the portions of the curve are exact quadrants, the successive centres are not difficult to find. The centres being marked on the drawing to be traced, and the junctions of quadrants also marked upon it, the tracing paper should be laid upon it and fastened down. The centre circle should be first drawn; the first inner quadrant should be drawn in the direction of the hands of a clock from the point of tangence, and so on. The line should not be too fine; the examiner tests the tracing by placing it over the drawing, and if the line of the tracing is very fine he can detect the slightest variation. On the other hand, to make a good heavy line showing sharp on both edges and uniform in breadth everywhere requires steady, careful manipulation.



Ionic Volute.
(Note.- Dotted lines belong to the Solution)

Views and Reviews.

Architectural Perspective.

Those who have read Mr. Middleton's little book entitled "Linear Perspective" must have been struck with the remarkable clearness with which he had explained what is often considered a difficult subject, and that too in a very small space. It was also an extremely cheap book. The edition having run out of print, Mr. Middleton has, instead of issuing a second, rewritten and extended the book. While somewhat more complete, there has been no sacrifice of lucidness—the illustrations, in fact, being to larger scale are clearer, and several additional practical examples are given. A chapter has also been introduced on isometric drawing, which is not commonly found explained in text-books, though often an extremely useful method. The concluding chapter deals with the preparation of finished perspectives, and is illustrated by a series of drawings by Messrs. E. Guy Dawber, C. E. Mallows, R. Phené Spiers, H. Inigo Triggs and others. Most useful chapters, too, are those on the delineation of curved objects, interpenetrations, interiors, bird's-eye views, the centrolinead, shadows from local sources of light and from the sun and reflections. Mr. Middleton's book is the most practical treatise on architectural perspective we have yet seen.

'The Principles of Architectural Perspective, prepared chiefly for the use of Students." by G. A. T. Middleton, A.R.I.B.A. London: B. T. Batsford, 94, High Holborn, W.C., price 2s. 6d. nett.

Machinery.

This book is an extremely able treatise on a difficult and somewhat abstruse side of machine design. The author is an instructor in mechanical engineering in the University of California, an Assoc. M. Am. Inst. of Elec. Engineers, &c., and, like most of the American professors, is far more lucid than our own professors in the most intricate explanations. Of course this book is somewhat difficult to understand from the very nature of the subject. It will undoubtedly be of more use to the student than to the practical engineer. The first two parts embody the more important principles of what is generally called the kinematics of machinery, though in many instances dynamic problems which present themselves are dealt with; the real purpose of the book being the application of the principles of mechanics to certain problems connected with machinery. Part I. is introductory, and Part II. discusses machinery of transmission. In the third part of the book the author discusses the mechanics of the steam-engine, as that machine is the most important from a designer's point of view; here the subject is treated under the two distinct heads of kinematics and dynamics. Kinematics is, of course, that branch of mechanics which deals with motion without reference to the cause producing it, and is important with machinery, where motion is entirely independent of the direction of the acting forces.

"An Elementary Treatise on the Mechanics of Machinery, with special reference to the Mechanics of the Steam Engine," by Joseph N. Le Conte. London: Macmillan & Co., Ltd. Price 10s. 6d. nett.

An Epoch-making Committee.

Under the authority of the Engineering Standards Committee Messrs. Robert Atkinson (London), Ltd., Salisbury House, London Wall, E.C., are preparing and issuing codified lists of the committee's findings in a form which should prove of great assistance to all buyers and sellers of British engineering sections throughout the world. To render this publication a standard work of reference, arrangements have been made to include in it complete lists of the manufacturers and merchants who roll or stock the standard sections. A pamphlet giving a short history of the committee and its work has just been compiled by Mr. Robert Atkinson. After concisely stating the development of the committee from the suggestion made by Sir John Wolfe Barry, the energetic support given by the engineering societies, and latterly by the Government, the names of those experts constituting the several sub-committees are given. The committee on bridges and general building construction is made up as follows:—Sir Benjamin Baker, K.C.B. (chairman), Colonel Sale, C.M.G. (representing the War Office), G. L. Eyles, C.M.G., and W. Shelford, C.M.G. (representing the Crown Agents for the Colonies), Max am Ende, Thomas Blashill, Alexander Buchanan (Handyside & Co., Derby), W. H. Panton (Dorman, Long & Co., Middlesbrough), F. E. Robertson, C.I.E. (Sir A. M. Rendel & Co.), H. J. Skelton (H. J. Skelton & Co.), J. Hamilton Turner (P. & W. Maclellan, Ltd., Glasgow), and J. E. Tuit (Sir William Arrol & Co., Glasgow). The labours of this committee have been confined principally to drawing up a series of standard beams and tees, and to the consideration of "equal and unequal angles," so as to meet all the requirements of general building construction. The standard list of beams includes only thirty sections, a considerable reduction from the large number formerly in vogue. It is a noticeable feature that some of the leading firms have already informed their customers that they are re-turning their rolls to comply with the new standard list issued by the committee. The committee on cement is made up as follows:—W. Matthews, C.M.G. (chairman), Bertram Blount (representing the Institute of Chemistry), H. W. Anderson, M. Fitzmaurice, C.M.G. (London County Council), A. Lyster (Liverpool Docks), J. A. McDonald (Midland Railway Co.), V. De Michele, W. W. Squire (Bristol Docks), M. F. Wilson (Dover Harbour Works), G. W. Yourdi (Birmingham Corporation Waterworks), B. P. Ellis (John Aird & Co.), E. Pearson (S. Pearson & Son, Ltd.), J. Warbrick (Sir John Jackson, Ltd.), H. K. Bamber, E. W. Brooks and O. L. Ellis (Associated Portland Cement Manufacturers), and C. A. Watson (J. C. Johnson & Co., Ltd.). Mr. Matthews is the engineer of the important harbour now under construction at Dover.

The New Architecture

Under the title of "The House Beautiful" Mr. R. Brimley Johnson, of 4, Adam Street, Adelphi, W.C., is now issuing "a monthly portfolio of designs in architecture by modern artists of all countries," price 2s. nett Some particulars of the first part will serve to show what kind of a publication it is. There are eight sheets, measuring about 14in. by 12in., enclosed in a green wrapper bearing an attractive design. Of the eight plates (printed at Stuttgart, in colour) four are by German architects, two from Vienna, one from Antwerp, and one from Paris—all in more or less "Art Nouveau" manner. Some of them are inclined to be wild in treatment, but the majority at least show that this new art, when kept within bounds, lends itself to much pleasant decoration. One thing can almost always be said in praise of "Art Nouveau"—it embraces the most delightful colour schemes.

Graining and Marbling.

There are many indications that the age of graining and marbling is passing away, for, with a truer perception of the arts, it has come to be regarded that men should spend their time and skill on something better than making one wood an imitation of another, or deftly giving plaster the appearance of marble. The author seems in a way to be conscious of this, though in his preface he endeavours to cover himself with the futile contention that "the imitation of wood and marble is always allowable where wood and marble would be employed by the architect." But these misguided trades still persist, and while they do there must needs be a demand for instruction in skilful trickery with paint and varnish. This series of plates is to be issued in fourteen parts, price 3s. 6d. each. The part before us has four large plates showing the four stages in the production of "Rouge Grotte"; they are admirably printed and serve their purpose well in showing how the work is proceeded with stage by stage, instead of simply depicting the finished sham.

"The Practical Arts of Graining and Marbling," by J. Petrie. London: The Trade Papers Publishing Co., Ltd., 365, Birkbeck Bank Chambers, High Holborn, W.C

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Determining Weight of Glass.

SWINDON.—W. B. writes: "Is there any means of determining the quality of sheet-glass after glazing without taking out the glass?—say the difference between 21oz. and 26oz."

The most obvious way is to try the weight of a glazed sash by means of a spring-balance. You will require to know the weight of an unglazed sash and the weight of putty, but you should be able to approximate to these. If the glass area of a sash is 9 sq. ft. the difference between 21oz. and 26oz. glass is 45ozs., nearly 3lbs., which is a considerable weight. If this method arouses suspicion you should take a pane out of a particularly light sash (if the glazing is fresh this will not be difficult) and weigh it.

P.

Dimensions for a Spring Jumping Board.

BRIGHTON.—E. H. writes: "I have to make a spring board for a small gymnasium. The sizes are:—Length of head 5ft., length of run 4ft. 6in., height of head 9in. What width and thickness of ash should be used? I was going to make the board according to sizes given me, the head-piece being ash 5ft. by 9in. by 2in., the running board of deal 4ft. 6in. by 16in. by 1½in., the blocks at each end being 12in. by 3in. by 9in.—all bolted together."

The dimensions proposed, namely, spring board 9in. by 2in. ash 5ft. long, running board 16in. by 1½in. deal 4ft. 6in. long, and blocks 12in. by 3in. by 9in., will do, but will be rather stiff. A man weighing 12 stone = 1½ cwts.; stepping on suddenly gives double load = 3 cwt.; jumping gives treble load – 4½ cwt. The breaking weight of an ash board 9in. by 2in. and 5ft. span is $\frac{6bd^2}{L} = \frac{6 \times 9 \times 2^2}{5} = 43{\cdot}2$ cwt. in centre. The actual load in centre will be 4½ cwt. Therefore the factor of safety will be $\frac{43{\cdot}2}{4{\cdot}5} = 9{\cdot}6$. If the thickness of the spring-board be reduced to 1½in. the factor of safety would be reduced to $\left(\frac{1\frac{1}{2}}{2}\right)^2 \times 9{\cdot}6 = 5{\cdot}4$. The bolts fixing running board to spring-board should have round flat heads let in flush with double nuts below. The spring-board may be fixed to the blocks by coach screws. HENRY ADAMS.

Carpenters Company.

BOSTON.—J. B. J. writes: "What is the address of the Worshipful Company of Carpenters? How can I become a member of that body?"

Apply to the Clerk to the Company, Carpenters' Hall, London Wall, E.C.

Rough-Cast.

REIGATE.—S. writes: "What is the most satisfactory way to specify rough-cast? Should the first coat be of cement-rendering? If this is so, would it not be useless to mix any colouring matter in the final coat, owing to cement 'killing' all colour?"

The most satisfactory first coat is cement in which chalk can be mixed to give a white colour. A good hydraulic blue lias lime is the next best matrix. Colours may be mixed with the cement without being killed, but the effect is not good.

Stone used at Owens College, Manchester.

MERFIL writes: "What stone was used for the late addition to Owens College, Manchester, and from what quarry was it obtained?"

Whitworth Hall at Owens College, Manchester, opened by the Prince and Princess of Wales in March, 1902, is built of Minera stone, the same as that used in the rest of the college buildings.

American Architectural Journals.

MOTHERWELL. — SCOT writes: "Kindly name an American architectural paper, and tell how to get it."

We have several times given particulars of the several architectural journals published in New York and Boston: see p. 33 of our issue for August 28th, 1901. Perhaps the "American Architect" (weekly, 50 cents—eight dollars a year post-free to this country; 211, Tremont Street, Boston, Mass.) will serve your purpose.

Salary of Estate Architect.

BOSTON SPA.—G. W. C. K writes: "What is the average salary paid to architects on landed estates?"

It would be extremely difficult to draw an average for such a case. The salary depends upon the estate, the nature of the duties, the quality of the man filling the appointment and the liberality of the employer. Perhaps from £120 to £250 per annum would be the general run, while an architect to a town estate might make £1,000 or more.

HENRY ADAMS.

Architects' Fees.

GLASGOW.—G. B. writes: (1) "Can a percentage be fixed on a job costing £35 requiring scale drawings and details and seven visits of inspection, or is it customary to charge by time in such cases? (2) What rate can be charged on a job costing £373—alterations to a building with designs for fittings, &c., inspection?"

(1) No. It is usually charged according to the difficulty and time occupied. (2) There is no special rate; a fair charge would be about twenty-five guineas.

Clerk of Works under Government.

PETERBOROUGH.—WORKER writes: "To whom should I write respecting a position as clerk of works under Government?"

Appointments under Government as clerk of works are mostly obtained in open competition by payment of certain fees. They include appointments under the Office of Works, Prison Department, Post-Office, Admiralty, &c. In some of these it is necessary that the applicant should have had previous experience as a clerk of works. "The Civil Service Year-Book," to be obtained through any bookseller, gives all necessary information as to qualifications, fees, &c. Competitions are advertised in the papers, and competitors can obtain information relative thereto on application to the Civil Service Commissioners. T. P.

Use of Instruments.

BARNSTAPLE.—W. M. writes: "What are the following instruments used for: micrometer theodolite, telemetrical theodolite, prismatic compasses, clinometers levels, proportional compasses and protractors? What is the meaning of the plans and solids on a proportional compass, also the hooked points and bar adjustment? What is the meaning of the accompanying scale (not reproduced)?"

It would require a volume to answer the string of questions propounded, and many books are already written that will furnish the required information. See Walmisley's "Land Surveying and Levelling" ("Builder" office, 7s. 6d.) and Walmisley's "Field Work and Instruments" ("Builder" office, 6s.). The sketch sent shows an ordinary rectangular protractor for measuring angles, with the other usual scales upon it for measuring lengths. If a correspondent neither knows the name nor use of this instrument one could hardly begin to describe to him the construction and use of such instruments as the level and theodolite. After six months' study in a systematic manner from suitable books he will be better justified in asking for information on any point that is then doubtful. HENRY ADAMS.

Buildings to Measure at Devizes, Luton, Kendal and Bath.

DEVIZES.—WILTS writes: "Kindly mention some buildings in Wiltshire (preferably Devizes or district) to measure for sheets Nos. 4 and 5 for R.I.B.A. Intermediate."

The church of St. John, Devizes, is one of the most interesting in the country. In the north wall of the chancel is an original semicircular window. The south-east chapel is Decorated work. At St. Mary's, Devizes, the south porch is a splendid example of Early English work. The nave is Perpendicular, and is also very fine. St. James' Church at Trowbridge is a fine old church which dates back from the fourteenth century and has an exceedingly fine font. M.

LUTON.—S. E. writes: "Kindly name some buildings near Luton worth measuring and sketching."

At Dunstable there are excellent remains of an ancient priory, and in the church are some excellent Early English portions in the west front, with a small portion of Decorated work. In the interior there is a splendid Perpendicular wood screen. At All Saints' Church, Leighton Buzzard, the tower and spire and most of the walls of the aisles are good Early English, as are also the nave piers, arches and doors. There are also some very good Perpendicular windows. St. Mary's Church at Luton has a good Perpendicular tower, and a very fine pier of Early English work in the north aisle and a good example of the Decorated period in the baptistery chapel. All Saints', Houghton Regis, has a Decorated chancel and a good Perpendicular tower, and the five bays of the nave have Decorated arches, with Perpendicular clearstory. M.

HIPPERHOLME.—CURIOUS writes: "Please suggest some buildings suitable to measure for the R.I.B.A. Intermediate, at or near Kendal and also at Colwyn Bay."

There is, so far as I can ascertain, nothing suitable in either district. G. A. T. M.

PORTOBELLO.—PORTO writes: "Which are the best buildings to measure in and around Bath, not including Wells?"

Probably the best Early work is to be found in the ruins of Glastonbury Abbey, of which the blind arcade towards the east end of St. Joseph's Chapel would serve your purpose admirably. The detail is of the purest early thirteenth-century style, though the western end of the chapel is earlier. Shetching is permitted so long as the admission fee is paid. One of the doors of Bath Abbey (late Perpendicular) might also be a useful study, while there is a Decorated window easy to measure at Amesbury. There is also plenty of good modern work by Mr. J. M. Brydon in Bath, and the Roman baths are worthy of careful study. G. A. T. M.

A Memorial at Guy's Hospital has been erected to those members of the hospital who were killed or died from disease in South Africa. It takes the form of a drinking fountain in coloured and polished marbles, designed by Mr. Frederick Wheeler, of Staple Inn. The bronze inscription, panels and mountings were supplied by the Coalbrookdale Company. Messrs. John Daymond & Son executed the work.

MODERN LONDON BUILDINGS.

(*Continued from* p. 241, *No.* 434.)

A list of public and semi-public buildings in the E.C. district was published in our issue for March 25th, of domestic and religious buildings, colleges and schools in the same district in the issue for April 1st, *of business premises in the same district in the issues for April 15th, April 29th and May 13th, and of hotels, restaurants, &c., in the same district in the issue for May 13th. A list of public and semi-public buildings in the E. district was published in our issue for June 3rd.*

E. DISTRICT: RELIGIOUS BUILDINGS.

Building.	Architect.	Approximate Cost.	Remarks.
1876.		£	
St. Margaret's Church, Barking Road, Plaistow.	F. W. Tasker	3,300 (exclusive of tower).	Brick is used for the general walling, the dressings externally being of Portland stone and internally of Bath stone. The church is groin-vaulted in brick throughout, and the style adopted was twelfth-century Gothic. The nave and sanctuary consist of four bays, 20ft. 6in. from centre to centre. The eastern bay is apsidal, and the accommodation provided is for 325 sittings.
1877.			
Christ Church, Jamaica Street, Stepney.	Ewan Christian	—	
Church of St. Mary (on the site of Old Parish Church), Whitechapel.	Ernest C. Lee	18,000 (exclusive of spire).	The church is built of Suffolk red bricks, with Doulting-stone dressings. The accommodation is for 1,300 persons, and there are nave 110ft. long by 38ft. wide, aisles 13ft. 6in. wide, chancel 37ft. 6in. long by 27ft. wide, and a tower and spire 200ft. high. The height of the building is 80ft. to ridge. Mr. Earp, of Lambeth, did the carving.
Church of St. Saviour, Walthamstow.	F. T. Dolphin	—	
1879.			
All Hallows' Church, East India Dock Road, Poplar.	- - - -	—	
St. Antony's Church, near Mile End Road.	Ewan Christian	9,700	The general walling is of yellow-stock brickwork, with stone dressings. Internally the shafts of the nave arcade are of grey pennant stone, with Bath-stone caps and bases. The accommodation is for 700 worshippers, the church being 125ft. long by 65ft. wide.
1880.			
St. Augustine's Church, Settle St., Commercial Rd.	Newman & Billing	7,500	There are 600 sittings. The building measures 96ft. by 53ft., and is of stock bricks and Bath stone.
1881.			
Böhler Memorial Chapel, Commercial Road.	E. Early Hollis	3,900	The ground floor consists of a school for boys and girls. The chapel is 59ft. by 37ft. 6in., and has a flat-curved ceiling 30ft. from the floor.
1883.			
Poplar and Bromley Tabernacle.	W. Allen Dixon	3,284	The tabernacle is 50ft. wide and 76ft. long by 40ft. high If provides accommodation for 1,000 persons, and is in the Byzantine style, the walls being of stock brickwork with white and red brick bands, and the columns of the portico of Bath stone.
1884.			
St. George's in the East Mission House.	Keith D. Young	—	The house accommodation includes a gymnasium in the basement, infants' Sunday school, kitchens, &c. The hall is in the rear, and is intended for the purpose of concerts, entertainments, &c.
1885.			
Church of St Thomas, West Ham.	J. Oldrid Scott	8,000	The style adopted was Decorated Gothic, and the accommodation is for 830 persons. The church itself is 15ft above the road level, the under portion forming six classrooms and vestries. The building is of brick inside and out. There is a tall turret at the south-west corner, and the nave and choir are under one roof.
1887.			
German Protestant Church and Schools, Goulston Street, Whitechapel.	H W. Stone	10,000	In the basement is a lecture-hall to seat 500 persons, and also a well-lighted play-room for the school children. The church seats 350 worshippers. The frontage of the buildings is 200ft., carried out in yellow brickwork and Bath stone.
1890.			
St. Frideswide's Church, Follett Street, Poplar.	R. Willie	3,600	This building was erected for the Christ Church Oxford Mission. It accommodates about 600 persons, and is of brick, faced externally with red bricks, with Chilmark-stone dressings. The nave and chancel, under one roof, are 38ft. wide by 91ft. in length. The style is Early English, with lancet windows.
United Methodist Free Church, Manor Park.	Potts, Sulman & Hennings.	—	The church consists of a nave and aisles 40ft. across, intersected by aisled transepts of equal height and width. Seating is provided on the ground floor for 475 persons. The materials are red bricks, Bath stone and green slates. The style is Gothic.
1891.			
"Bermondsey Settlement" Buildings (for Religious and Social Work), Farncombe Street, Bermondsey.	Elijah Hoole	—	The buildings which are to form the "Settlement" contain a lecture-hall, classrooms, students' library and reading-room, chemical laboratory, workshop and a gymnasium, together with a warden's house and a residence for about twenty men.
Church, Red Cross Street, Borough.	F. A. Walters	7,000	The church is 132ft. by 42ft., Romanesque in character, and built in brick. The accommodation is for 700 persons.
1892.			
St. Philip's Church, Stepney	Arthur Cawston	40,000	The general wall facings are of stock brickwork, relieved with Bath-stone dressings. Ancaster stone is used externally, with red brick for the walling. The lady chapel is of Sussex stone, with a central column supporting the vaulting, which is of Hopton Wood stone.
1893.			
Mission Hall, St. Andrew's Presbyterian Church, Philpot Street, Whitechapel.	Alfred R. Pite & Son.	—	Large waiting- and reading-rooms are provided in the basement for the use of patients, and meeting-rooms are provided on the ground floor, the other part being adapted to mission purposes.
Roman Catholic Church Schools, Bow Common.	Fredk. A. Walters	—	The church is in the thirteenth-century style and accommodates 800 persons; the schools are arranged for 500 children.
St. Mark's Church, Forest Gate.	E. P. Loftus Brock	—	Accommodation is provided for 400 persons. The building is of brick, with external angles and arches of red brick. The walls internally are plastered.
1896.			
St. Clement's Church, South Grove, Ilford	J. E. K. & J. P. Cutts.	8,000	This building is in the Early English style and is built of red brick. It accommodates 900 persons.
St. Matthew's Church and Parochial Hall, West Ham.	E. P. Loftus Brock	Church, £4,300 Hall, £680	The style is Gothic, of late thirteenth-century date and the walls are constructed with flintwork, with yellow brick quoins, reveals, patterns and bands of brickwork. The principal windows are traceried and the roof is covered with red tiles. The accommodation is for 650 persons. On the north side of the church is the parochial hall, with classrooms, kitchen and offices.
1897.			
Church of St. Michael and All Angels, Little Ilford.	Charles Spooner	7,000	The church has nave and aisles, spanned by a single hammer-beam roof; a chancel, with narrow aisles; side chapel on the south, vestries and organ transept on the north; and a baptistery and two porches at the west end. The walls are of red brickwork, and the roofs and weatherings of the buttresses are covered with red tiles. The mullions heads and jambs of the windows and nave columns are of Bath stone, with red-brick arches and stone springers.
1899.			
Hambro Synagogue, Union Street, Commercial Road, Whitechapel.	Lewis Solomon	4,000	Accommodation is provided for more than 400 persons.
1900.			
Congregational Church, Stamford Rd., East Ham.	J. D. Bould	—	
St. Andrew's Church, Bromley-by-Bow.	W. D. Caröe	6,500	The church will accommodate 600 worshippers. The external materials are red brick and red tiles, stone being used in the interior.
St. Edmund's Church, Halley Road, Manor Park.	J. E. K. & J. P. Cutts	4,700	The church will eventually consist of chancel, gabled chancel aisles—that on the north being planned for a morning chapel, the south aisle containing the organ, vestries, nave, aisles and west porches. The portion erected is the east end, with seating accommodation for 500 persons. The building is faced with red bricks, with Bath stone dressings and tiled roofs.
St. Mary's Church, Plaistow (additions).	Wadmore & Mallet	—	The additions comprise a new north aisle.
St. Matthew's Mission, Church, Vicarage Lane, Stratford.	George Baines	—	A simple treatment of Early Gothic is adopted for the design. A narthex containing two main entrances relieves the front elevation. The chancel arch is of Bath stone, carried on columns of the same material. The roof is open-timbered, of hammer-beam construction, with boarded ceiling. The vestry stands by the side of the chancel. Class-rooms, kitchen and other conveniences are placed in the basement.
St. Nicholas's Mission Church, Blackwall Stairs Poplar.	Messrs. Clarkson	—	Attached to the church are a large recreation-room, kitchen, and a committee-room which serves as a church vestry. The church is of red brick inside and out, with very little stone. The roofs are of slate. There are six bays, having a total length of 65ft. and a width of 35ft. The height from floor to apex is 50ft At the east end is a spacious apse about 30ft. across, covered by a semi-dome. The walls of the attached buildings are of yellow brickwork, and the openings have flat arches.
Wesleyan Church, Romford Road, Manor Park.	Charles Bell, Withers & Meredith.	3,800	The church seats about 424 persons on the ground floor and 200 in the gallery which runs round three sides.

E. DISTRICT: RELIGIOUS BUILDINGS—*cont.*

Building.	Architect.	Approximate Cost.	Remarks.
1901.		£	
Baptist Church, Plashet Grove, East Ham.	Edgar Stones	9,000	
Congregational Church, Wakefield St, East Ham.	Mould & Parritt	4,800	The church will seat between 700 and 800 persons, and has attached classrooms for Sunday schools, &c.
1902.			
Church of St. John, Seven Kings, Ilford.	- - - -	1st portion, £2,329 Total £7,000	The church is in the Perpendicular style, freely treated. The materials used are brick and Bath stone. The building will accommodote 802 persons when completed. The present portion, consisting of chancel, side chapel, organ-chamber and two bays of the nave and aisles, will accommodate 480.

E. DISTRICT: COLLEGES AND SCHOOLS.

Building.	Architect.	Approximate Cost.	Remarks.
1876.		£	
Board Schools, Knapp Road, Bromley-by-Bow.	E. R. Robson	7,362	The schools are designed to accommodate 841 children, at a cost of £8 15s. 1d. per head. The style of the buildings is Queen Anne.
Board Schools, Bonner St., Green St., Bethnal Green.	E. R. Robson	9,098	These schools accommodate 814 children, and are designed in the Queen Anne style.
1877.			
German Lutheran Church Schools, Whitechapel.	E. A. Grüning	5,000	The schools accommodate about 600 children.
1880.			
Board School, Farrame Street, Limehouse.	E. R. Robson	9,873	The schools accommodate 1,200 children, and were erected at a cost of £8 4s. 6d. per head.
1881.			
Board School. Oban Street, Tower Hamlets.	E. R. Robson	18,244	The style of the design is Gothic in tendency. The schools will accommodate 1,400 children.
1883.			
Board Schools, Hayne Street, Bethnal Green.	E. R. Robson	11,410	The accommodation is for 1,200 children.
1884.			
George Green's Schools, Crisp Street, Poplar.	John Sulman	10,500	The schools comprise a large lecture-hall to seat 600 persons and six classrooms to hold 200 boys, with the same number of rooms for girls below. The buildings consist of two blocks. The roof is an asphalted flat, serving the purpose of a playground for the girls. Red bricks and Portland stone were used.
1885.			
Board School, Denmark Street, Plaistow.	S J. Newman	10,800	The accommodation is for 1,272 children.
Gower's Walk Free Schools, Rupert St, Whitechapel	Ernest C. Lee	—	The schools will hold 184 children. They are faced with stock bricks and have red-brick dressings. Messrs. Earp, of Lambeth, were responsible for the carving.
Raines' Charity Schools, St George's-in-the-East.	Wilson, Son & Aldwinckle	3,600	The style adopted was a free treatment of French Renaissance, carried out in red brickwork, with red Dumfries stone dressings. Accommodation is provided for 350 children
1886.			
Berner Street Board Schools, Commercial Rd.	T. J. Bailey	13.300	The accommodation is for 1,200 children.
1894.			
St. Stephen's Sunday Schools, Saxon Road, Bow	Holmes	2.000	
1895.			
Board Schools Star Lane, Canning Town.	Newman & Jacques	18,220	The schools, which consist of a ground floor and two storeys above, will accommodate 1,566 children. There is a caretaker's residence on the site, adjoining which is a building fitted for instruction in laundry-work and cookery.
The Horns Board School, Birkbeck Estate, Ilford.	C. J. Dawson	1,800	The school will accommodate 130 children and is built of stock bricks with buff terra-cotta bands, coping and finials; the roof is covered with Broseley tiles. A lead-covered bell-turret rises from the roof.
1896.			
Board Schools, Cleveland Road, Ilford.	C. J. Dawson	—	The buildings, which form a block three storeys high, are designed on the classroom and central-hall system. The total accommodation is for 1,614 children. In each storey is a central-hall 65ft. by 32ft. The exterior is in blue Staffordshire bricks and moulded-facing bricks, picked out in buff terra-cotta. The floors are of steel and concrete construction, and are covered with wood blocks.
Extension of the Coopers' Co.'s School for Boys, Tredegar Sq., Bow Rd.	H. Chatfield Clarke	2,000	The new rooms are in a separate block added on to the existing school buildings, and are on two floors. On the ground floor, the physical laboratory occupies the front portion of the wing and a mechanical workshop and dark-room in rear. On first floor are a chemical laboratory & a lecture-room, with preparation and store-rooms attached.
1897.			
Board School, Essex Road, Little Ilford.	S Jackson	14,168	The schools are designed to accommodate 1,582.
Boys' School. Newport Road Schools, Leytonstone.	William Jacques	8,772	The building contains accommodation for 600 boys on two floors, there being five classrooms on each floor. On the ground floor is a hall 60ft. long by 35ft. wide. Rooms for masters and assistants are placed on the upper floor. A caretaker's cottage is also provided.
1898.			
Coborn School for Girls, 31 & 33 Bow Road	George Elkington	13,000	The building is designed to accommodate 300 girls. The school is square on plan and has a central-hall, with classrooms ranging round it. The hall is top lighted and has an open timbered roof and a gallery at first-floor level. There are ten classrooms, each with good left-side light. On the lower ground floor is the pupils' entrance, with extensive cloak-rooms, two of the classrooms, three music rooms, dining-room to seat 100 girls, kitchen department, stores and cellarage. On the first floor is an art school and on the second floor a technical department, comprising a laboratory 42ft. by 21ft, The building externally is faced with red brick and Portland stone; the roofs are slated. Fireproof construction is employed for the floors.
Jews' Free School (Additional Wing), Spitalfields.	W. S. Joseph	20 000	
Public Technical Institute, Romford Road. Stratford.	Gibson & Russell	—	The structure and its environs occupy an acre and a half of land The body of the building is of red brickwork, heavily corniced and ornamented with masonry, the portico of the main entrance being supported on either side by carved figures. The institute is appointed with workshops, cookery school, laundry and a free library.
1899.			
The Sir John Cass School and Institute. Aldgate.	A. W. Cooksey	–	The ground floor contains a large lecture theatre, with accommodation for 225 persons, and four rooms for instruction in arts and crafts. The board-room and secretary's office are in close proximity. Upon the first floor there are classrooms, library and reading-room. The second floor comprises a chemical laboratory, a tailor's workshop and a women's department, including a laundry, cooking school and dressmaking-room. There is also a gymnasium. In the basement provision is made for the building and allied trades.
1901.			
The Park Higher Grade School, Melbourne Road, Ilford.	C. J. Dawson	16,710	This building is designed on the central hall and classroom principle. The ground floor, which is for the accommodation of 300 girls, consists of a centrall hall 68ft. long by 30ft. wide, around which are grouped six separate classrooms and a head-mistress room, together with cloak- and dining-rooms. At the south end of this floor are cloak- and dining-rooms for boys, with an entrance leading to the first floor, where similar accommodation as that provided for girls is provided for 300 boys. The assistant-teachers' rooms, with lavatories, are arranged in mezzanines. The building externally is faced with yellow stocks with a blue-brick plinth, and with Cattybrook buff brick and terra-cotta bands, piers, arches, strings and cornices.
Wesleyan Sunday Schools, High Road, Ilford.	Gordon & Gunton	3,000	The building will accommodate about 550 persons, and consists of a classroom 50ft. by 40ft. and an infant's room 17ft. by 20ft. There are a church parlour and other rooms on the first floor. The building is of brick, with Bath stone-dressings, and is about 30ft. high.
Working Lads' Institute, Whitechapel (additions).	George & R. P. Baines.	1 300	The additions to the institute comprise a new lecture-room and apartments for the caretaker in the rear.
1902.			
School for Crippled and Mentally-Deranged Children, Grange Road, West Ham (in course of erection).	W. Jacques	6,703	The site has frontages to Bethnal Avenue and Hermit Road recreation-ground. The school is situated next the Grange Road Board Schools, from which, however, it will be quite distinct. The building comprises two separate schools—that to the south, for eighty imbecile children, contains four classrooms, each 20ft. square, with a small hall 40ft. by 20ft. The western wing contains the school for forty cripples. It comprises two classrooms, each 20ft. square, and a small hall.

[At the end of the list given on p. 241 of THE BUILDERS' JOURNAL for June 3rd, the architects of the new buildings at the North-Eastern Hospital at Hackney were stated to be Messrs. A. & C. Harston. This is incorrect. The architects were Messrs. Marshall & Vickers. The description given applies to the North-Eastern Hospital (Metropolitan Asylums Board), St Anne's Road, South Tottenham, of which Messrs. A. & C. Harston were the architects.

Builders' Notes.

Book-keeping for Builders.—Mr. Frederick Corse, of 56, Theobald's Road, W.C., issues a booklet on "Account Books and How to Use them" (price 1s.)—a special feature of which is an explanation of book-keeping for builders and contractors.

The Northern Counties Federation of Building Trades' Employers, at a meeting held last week with reference to the strike of joiners at Sunderland for an advance of one halfpenny per hour wages, decided to lock out the joiners in the different towns affiliated if no settlement had been arrived at before the arrangements for a lock-out are completed.

The Building Trade in Kirkcaldy District at the present time is very depressed. For many years past building has been brisk, and owing to this fact the reaction will be all the more keenly felt. The whole of the large contracts have been practically finished, and now there are only a few small jobs on hand. Many masons have already left the district for Glasgow, Govan, Edinburgh and towns nearer home, where work is more plentiful.

Labour Disputes in 1902.—The Labour Department of the Board of Trade in its fifteenth annual report on strikes and lock-outs in the United Kingdom in 1902, and on conciliation and arbitration boards, states that on the whole the year was less affected by labour disputes than the preceding year. The building trades and the transport and dock labour group show a great reduction in the number of persons affected, while for a group so important as the metal, engineering and shipbuilding group the figures are remarkably small. Questions of remuneration were, as usual, the most frequent causes of disputes, though the preponderance of wages disputes was less marked in 1902 than in any of the years 1898–1901. Thus, of the total of 442 disputes of 1902, 267, or 60 per cent., arose under this head; but these embraced only 48·6 per cent. of persons directly concerned, as against 52·7 per cent. in 1901 and 61·4 per cent. in 1900. During the last four years there has been a marked decrease in the number of persons directly affected by disputes having advances of wages for their object, and a corresponding increase in those resisting reductions of wages. Disputes as to hours of labour were of comparatively little consequence, but a large number of workpeople were engaged in disputes arising out of refusals to work with non-union men and other questions of trade-union principles, the proportion so involved being 21·8 per cent. of all those directly engaged in the whole of the disputes of the year.

Labour in the Colonies.—The Emigrants' Information Office, 31, Broadway, Westminster, S.W., states that in Canada nearly all trades, especially the building, metal and engineering, and wood-working and furnishing trades have been well employed, and in some parts there is a dearth of skilled labour, but not in British Columbia or in the iron and steel works at Sydney (Cape Breton). Emigrants are advised not to go to New South Wales at the present time on the chance of getting work. In Victoria the effects of the drought continue, and there is no demand for labour. The report of the Royal Commission on the Factories and Shops' Law which has just been issued recommends the establishment of Courts of Conciliation and an Arbitration Court, in place of the present Wages Boards; the report also draws attention to the "marked decadence of industrial efficiency" in the higher-class trades and industries "owing to the increasing number of poorly-trained workmen in the ranks of the younger generation," and recommends "that a system of indentured apprenticeship be made compulsory in all the principal trades and manufacturing industries, and that facilities for technical instruction be increased. In South Australia there is practically no demand for more mechanics in the towns, but a skilled hand such as a mason, bricklayer, engine-fitter, blacksmith, joiner or carpenter can generally find employment after looking about for a little. In Queensland there is no demand in the building trade. In Western Australia there is little demand for mechanics, but competent men in the building trades (except masons) can get work at Perth, Northam and elsewhere There is no demand for them at Fremantle, Coolgardie or Albany. In New Zealand the building and engineering trades have been busy in nearly all the principal places. In Natal a good deal of work is going on in the building and other trades; and though the local supply of labour has been largely increased by many new arrivals, specially skilled men, if they land with a little money, should be able to procure work without difficulty. As to the Transvaal, carpenters at Pretoria have struck for a minimum standard of £6 16s. a week. The building trades continue brisk, and good carpenters and bricklayers can obtain work, but there is no opening for inferior or unskilled men. Plasterers and stone-cutters (freestone) are in demand. There is a fair demand for first-class painters, but none whatever for rough painters; they must be thoroughly good men, capable of mixing their own paints, &c In the Orange River Colony there is a fluctuating demand for good carpenters, masons, fitters and painters, and men's wages have been recently raised to 2s. 6d. an hour.

Keystones.

The Campanile at Massa, in Tuscany, was struck by lightning last week and badly damaged.

Ventilating and Heating.—Messrs. E. H. Shorland & Brother, of Manchester, have just supplied some of their patent warm air ventilating Manchester grates to the Infectious Hospital, Warrington.

City Orthopædic Hospital. — The Committee of Management are carrying out considerable improvements and additions to the premises in Hatton Garden, consisting of new isolation ward, registration and consulting rooms and nurses' cubicles. The architect is Mr. F. T. W. Goldsmith, A.R.I.B.A.

Crathie Church has been undergoing considerable alterations by direction of the King. The roof was previously covered with slates, but the church has now been covered with red English tiles. A number of internal improvements is being effected. A carved oak canopy is to be placed over the pulpit. A niche is to be formed in one of the pillars opposite the pulpit, and in it is to be placed a bust of Queen Victoria.

A Memorial to Queen Victoria has been erected in the Market-place at Newbury. It consists of a statue of the late Queen about 8ft. high, including the plinth over which the robes are draped. The lower part of the memorial is on the plan of a cross, measuring 22ft. each way. On each side of the pedestals forming the arms of the cross is a recumbent lion 6ft. 3in. long. In the front recess stands a female figure representing "Fame" looking up at the Queen. The total height of the memorial is 28ft. The material used is Doulton's terra-cotta. The design was made by Mr. Arthur E. Pearce, and the statues and lions were modelled by Mr. John Broad. Both artists are on the staff of the Royal Doulton Potteries at Lambeth.

At St. Saviour's, Southwark, a memorial window has been erected in the north aisle to the late Mr. James Frederick Field, surveyor and auctioneer, of Borough High Street, who was assistant treasurer of the Collegiate Church and member of the chapter. It is designed by Mr. C. E. Kempe.

A new Catholic Church at South Bank is being erected from designs by Messrs. Brodrick, Lowther, and Walker, of Hull, Mr. Anthony Lyons, of Norton, near Malton, is the contractor. The building will accomodate about 700 workshippers. The cost will be between £7,000 and £8,000.

An Excellent Map of Peru, with particulars of the country, its organization, industries, &c., printed on the back, has just been issued under the authority of Don Eugenio Larrabure y Unánue, Minister of Foreign Affairs. Copies can be obtained from Mr. Eduardo Higginson, Consul for Peru at Southampton.

Truro Cathedral.—The top stone of the central tower of Truro Cathedral was laid last week. The tower will cost £15,000. Except for the two western towers, which are estimated to cost £7,000 each, and which will not be proceeded with until the money to pay for them is offered to the cathedral authorities, Truro Cathedral is now complete.

A Skycraper Forty-five Stories High.—Plans were submitted last week to New York city authorities for the building of a great city hall together with a railway station in Park Row and Chambers Street. The building is to have a great tower on the campanile plan forty-five stories high, or fifteen stories higher than any New York "sky-scraper." The total cost, including the ground, is estimated at £1,800,000.

Blackpool Competition.— The Blackpool Town Council have made the following awards on the competitive designs for a new technical school to be erected on the Raikes Hall estate, at a cost of about £17,000.—First (£50 premium), Messrs. Potts, Son & Pickup, Bolton; second, Messrs. Cheers & Smith, Blackburn; third, Messrs. Simon & Crawford, Manchester. Messrs. Potts, Son & Pickup were the architects for the new Town Hall at Blackpool.

New Public Buildings in London.—Mr. Victor Cavendish, as representing the First Commissioner of Works, has informed Mr. John Ellis in the House of Commons that the dates for the completion of the contracts for the fabrics of the new public buildings are as follows:—New War Office, June 26th, 1906; New Public Offices in Parliament Street, June 1st, 1907; Royal College of Science, June 1st, 1905; Victoria and Albert Museum, February 23rd, 1907; Admiralty (Block III.) (say) June 30th, 1906. (Contract about to be made for superstructure.) Such progress is being made with the above works as to justify an assumption that they will be completed by the specified dates. In some cases it is possible that the fittings will not all be finished, but every effort will be made to avoid delay.

The New Cloister at the Charterhouse which was inaugurated last week at Godalming has been erected as a memorial for Old Carthusians who fell in the South African war and in other British campaigns. In addition to the cloister a new transept to the chapel has been built. The cloister is built of stone, and is situated on the west side, being set out in bays corresponding with the existing buttresses, and following the lead given by the existing wall. The style is Gothic. The cloister will also afford a place of honour for the reception of other memorials of Old Carthusians. It is also proposed to place the statue of Dr. Haig Brown—now on the Green—in the cloister. The architect is Mr. W. D. Caröe.

Law Cases.

Building more than one House on a Lot of Ground.—The case of *The Ilford Park Estates, Ltd.* v. *Jacobs* was recently heard in the Chancery Division of the High Court of Justice. This was a motion by the plaintiffs for an injunction to restrain the defendant from erecting on certain lots in Brisbane Road, Ilford, Essex, more than one house within the meaning of a covenant contained in a conveyance dated November 14th, 1898, or any house of less value than £300, or any building whereof the elevation had not been approved in writing by the plaintiffs' surveyor upon any one of the lots. It appeared that the defendant submitted first of all an elevation and then an amended elevation of the proposed buildings to the plaintiffs' surveyor, who refused to approve them. The buildings were to consist of two floors. On the ground floor was one complete tenement with its own front door. On the upper floor was another complete tenement. Access to the upper floor was obtained through a separate front door opening on a staircase, which was divided by a brick wall from the ground-floor tenement. The two front doors were side by side, set back in an archway. The plaintiffs' surveyor alleged that these buildings, which the defendant was now proceeding to erect, were a breach of the stipulation that not more than one house should be built on any lot. Mr. Justice Swinfen Eady, in giving judgment, said the contention on behalf of the plaintiffs was that the defendant was putting up on one lot two houses which were separated horizontally and not vertically. It was not disputed that, if the defendant were erecting two semi-detached houses vertically separated they would constitute two separate houses, but it was contended that the building was in reality only one house. There was no internal communication between the ground floor and the first floor; there was no common staircase, as the ground floor did not require a staircase; and there was no common front door, but separate front doors for each of the two tenements. In order to pass from one house to another it was necessary to go out of the front door of one tenement to a space which opened upon the street and to enter the front door of the other. The language in which Lord Brampton in *Grant* v. *Langston* (1900, A.C., 383) described the building there in question was exactly appropriate to describe the building in the present case. At page 399 he said: "One roof covers the whole building, but each storey is so structurally composed and arranged for permanent occupation by a separate occupier that there is no internal communication of any kind between the two storeys, nor any common staircase or access to or from the street, or from any part of the outside of the premises, each having a separate entrance or entrances therefrom. In short, it would be impossible to erect two separate houses under one roof or to divide one building into two distinct and separate houses more completely than has been accomplished in the building now under consideration." Now, the question was whether each of these buildings constituted one or two houses. On the one hand, reference was made to the cases of blocks of flats. The first case was that of *Kimber* v. *Adams* (1900, 1 Ch., 412) before Mr. Justice Cozens-Hardy and the Court of Appeal, where the defendant had erected blocks of flats on the plots purchased by him subject to similar restrictions to those in the present case. There it was contended that each flat in a block of flats was a separate dwelling-house, but Mr. Justice Cozens-Hardy held that each block of flats constituted only one house. It appeared to his Lordship that in the present case there was merely one house superposed upon another house and divided horizontally. It was said that with certain modifications of the plans the buildings could be converted into flats. Whether that could be done or not was not for his Lordship to say. In his Lordship's judgment each building constituted two separate houses and was a direct breach of the covenant in question. There would, therefore, be an injunction in the terms of the notice of motion.

WORKMEN'S COTTAGES.

The Problem of the "Parlour"

At last week's meeting of the London County Council the Housing of the Working Classes Committee reported that in the planning of cottages they were obliged to take into account other factors than those which regulated their action in regard to block buildings. In particular, the persons who occupied these cottages insisted upon having one room in each tenement which could be set apart for occasional or ceremonial use only. The Committee thought, on the other hand, that the space, which was to a great extent wasted in the parlour or ceremonial room, might partially be thrown into the living-room or scullery. They referred to the case of "tenants on the Totterdown Fields Estate, who are using their kitchen-scullery as their living-room, and their living-room as their parlour. The total cubic space in these two rooms is 1,753ft., divided into living-room (parlour) 1,224 cub. ft., that is, 144 sq. ft., and kitchen-scullery (living-room) 529 cub. ft., that is, 74 sq. ft. Were they permitted to give a parlour of, say, 70 sq. ft., a kitchen or living-room of 148 sq. ft. could be provided, thus affording the same amount of cubic space, enabling the tenants to live under more healthy conditions, and at the same time meeting their very natural desire for a separate room in which could be secured that privacy which in the single living-room of a family is impossible. In a word, the Committee's object was to provide cottages similar to those which are built on the best managed estates in the country, such as those of the Duke of Bedford, Lord Portman and others. They do not desire in any way to compete with the jerry-builder, either in the reduction of the quality of the building or of the amount of cubic space, but simply to be able to rearrange the accommodation for the provision of more practical comfort for the Council's tenants." They recommended: "That, without in any way diminishing the quality of the constructional work in the Council's cottages, or curtailing the area of the living space provided, the Housing of the Working Classes Committee be permitted to rearrange the rooms so as to allow of the provision of the same number of rooms or cubicles of varying sizes in lieu of all rooms being of a compulsory minimum size."

An amendment to refer the report back was moved by Mr. R. Williams. Mr. Burns, M.P., said that personally he favoured an extension of the kitchen at the expense of the parlour. The average workmen's parlour was a mausoleum of wax fruits, family Bibles, and dusty antimacassars, and the only persons admitted to it were the doctor, the undertaker and the insurance man. Lord Carrington, chairman of the Committee, agreed that they must not abandon the standard of a 12ft. minimum for the living-room. They had four classes of cottages at Totterdown Fields. The first-class was of the sort which most people built on their own estates, comprising three bedrooms, a parlour, a living-room and scullery. The rent was high (11s. 6d. per week) but the cottages were popular, and the Council could let any number of them. The second and third classes, with diminished accommodation, were rented at 8s. 6d. and 7s. 6d. respectively. The fourth-class were flats containing one bedroom, one living-room and a small scullery in which there was a kitchen range. The Committee hoped that they would meet the demand of a very large class, but to their astonishment there was no demand at all. The amendment was rejected, and the Committee's report agreed to.

Upon the motion of Mr. A. Smith, it was resolved: "That, having regard to the urgent need of healthy dwelling accommodation for working people, it be referred to the Housing of the Working Classes Committee to consider the desirableness of putting into operation section 59 (part III.) of the Housing of the Working Classes Act, 1890, which gives power to acquire 'existing buildings,' and to 'alter,' 'enlarge,' 'improve' and 'convert' the same into dwellings."

The Historical Buildings Committee reported that their attention had been called to a proposal that had been made by Messrs. W. B. and F. Faulkner to erect in place of the Obelisk, St. George's Circus, an ornamental illuminated clock tower in commemoration of their long-standing connection with Southwark. They had communicated with the Council expressing the hope that, having regard to the historic character of the monument in question, the proposal would not be acceded to. The Obelisk was erected in 1771. The Southwark Borough Council had, they understood, accepted the proposal involving the removal of the monument.

L.C.C. Works Department.

The half-yearly return of the Works Committee, covering the cost of works completed by the department during the half-year ended March 31st last, has just been presented to the Council. It discloses some large and serious losses, but these are mainly in connection with the erection of Horton Asylum, Epsom, and the matter has already been fully discussed in the Council. The return deals with twenty estimated works, the final estimate for which was £591,790, while the actual cost has turned out to be £638,534, or a balance of cost above final estimate of £46,744. On only four of the works is any excess of cost over estimate shown, but in these cases the excess is £56,535. The cost of the building of the superstructure of the Horton Asylum has exceeded the estimate by £37,878, the final estimate being £291,165 and the actual cost £329,043. The erection of a central electric lighting station for the same asylum has resulted in an excess of cost over estimate of £1,977 on a job estimated to cost about £14,000. The provision of an "epileptic colony" on the Horton estate as an adjunct to the asylum has resulted in a balance of cost above estimate of £5,018. The other loss, which amounts to £11,617, is on the construction of the Hackney Wick relief sewer. This work was estimated at £125,329, and has actually cost £136,946. With regard to this work the Committee do not think that the ultimate cost is excessive, having regard to the difficulty of estimating accurately. The remaining sixteen works embraced in the return all show a balance of cost below estimate, the aggregate saving amounting to £9,791. The jobbing works executed by the Committee during the half-year have resulted in a balance of cost below schedule value of £1,334. In concluding their report, the Committee state that the number of works referred to them for execution and not included in the present return was forty-one, representing an estimated expenditure of, approximately, £739 000, but they did not anticipate an excess of cost over accepted estimate in respect of any works where the accepted estimate was over £1,000.

THE FIRE PREVENTION CONGRESS.

THE opening ceremony of the International Fire Prevention Congress by the Lord Mayor of London (Sir Marcus Samuel) took place in the Empress Theatre of the Earl's Court Exhibition on Monday last. It was a brilliant spectacle, by reason of his Lordship appearing in state and the great muster of foreign delegates wearing resplendent uniforms. The Lord Mayor, welcoming the delegates, stated his pleasure in being present at the opening of such an important Congress, and dwelt upon the benefits of international co-operation in dealing with fire matters. Lord Windsor associated himself, as a member of the Government, with the welcome extended by the Lord Mayor. He thought that in all matters of art and science there should be a free intercourse of ideas among the nations. The Hon. Thomas Cochrane, of the Local Government Board, also welcomed the delegates. He thought the work of fire-fighting one of the noblest in existence. Mr. E. O. Sachs then delivered the Congress Address. He said there were 800 delegates present, representing fifteen governments and 150 municipalities from all over the world. Never before in this country had a gathering been held at which architects, engineers, surveyors, municipal officials, legislators, insurance officials and fire surveyors met to take council with Fire Brigade chiefs and Salvage Corps officers. General preventive measures might be the result of private initiative, but as a rule they are required to be defined by the Government or local authority in Building Laws, Fire Protection Acts, Fire Survey Regulations, or, as in the United States and many Continental countries, set out in the publicly recognized schedules of insurance companies and mutual or municipal insurances offices. They were frequently supplemented by special rules for the treatment of extraordinary risks. These preventive measures were as a rule initiated and at times facilitated by the work of learned institutions or technical societies, such as the British Fire Prevention Committee. This Congress was convened by the Executive of this Prevention Committee. To expect any immediate public action, however necessary, as the outcome of the Congress work would lead to disappointment, but their deliberations would, he trusted, result in laying well and truly the foundations of several important reforms in the near future.

Sir Louis Lépine, G.C.V.O., Prefect of the Paris Police, expressed his pleasure in being present, and alluded to the excellent work of Mr. E. O. Sachs, the Chairman of the Executive. He expressed a hope that the Lord Mayor would visit Paris. On behalf of the French Government he made presentations of diplomas of honour to Mr. E. O. Sachs; Lieut.-Col. Fox, Chief Officer of the London Salvage Corps; Mr. Horace S. Folker, Hon. Sec., Fire Brigades Union, & Mr. C. Brasier, Chairman, London Private Fire Brigades Association. Prince Lvoff (Russia); Herr Giersberg, Commander, Fire Brigade, Berlin (Germany); Chevalier Goldoni (Italy); Mr. Charles Hexamer (United States) and Herr Czermack (Austro-Hungary) next spoke.

Sir William Preece, representing the Civil Engineers, said he spoke for a profession which largely contributed to the comfort and safety of man. He said the Congress was a great technical educational factor.

M. Dimitry G. Metaxas (Greece), proposed a vote of thanks to the Lord Mayor for presiding, Mr. E. O. Sachs supporting.

The general and sectional meetings of the Congress were begun yesterday, and will be continued to-day and to-morrow; a full report will appear in our next issue.

Bricks and Mortar.

Aphorism for the Week.

The function of the architect is to use a mass of practical knowledge to an artistic result.—BASIL CHAMPNEYS.

Our Plates. SOME particulars of Seacroft Golf Links Hotel at Skegness (the architects of which are Messrs. Brewill & Baily, of Nottingham) were given in our issue for May 13th last, when another view of the building was published as a centre-plate.—"Oakhill Drive," Surbiton, has just been completed. It is approached from Oakhill Road by a straight private drive 400ft. long (whence the house derives its name) having a carriage court at its termination on the north-west side of the house, where the entrance porch is situated. The kitchen garden has a frontage to the Kingsdown Road. The ground falls away considerably from the house on the garden side, so that the terrace, which is 30ft. wide, stands 5ft. above the level of the tennis and croquet lawns and has a brick retaining wall with steps. The facings to the house are of Crowborough bricks with red dressings. The bay windows of the dining-room and drawing-room are of Monk's Park stone and the rest of the windows of wood painted white. The copings and caps are of Robin Hood stone. The roof is covered with light sea-green Westmoreland slates from the Tilberthwaite Co.'s quarries in diminishing courses with lead ridges. The hall and staircase are lined with white panelling, and the doors of the principal rooms are of polished mahogany. A feature has been made of the loggia (or open-air room) facing south-west, which can be approached direct either from the drawing-room, billiard-room or hall; like the porch, vestibule, cloakroom, &c., it has a mosaic floor. Besides the accommodation shown on the ground plan, there is a sitting-room on the first floor opening on to the balcony over the loggia, which has a large awning to cover it, and ten bed- and dressing-rooms with three bathrooms, dark-room for photography, and the usual offices. The heating was carried out by Mr. Edward P. Milne, of 15, Craven Street, Strand, both the domestic supply and that for the radiators (though separate) being heated by Milne's patent "Duplex" boiler in the basement. The electric-light installation is by Mr. G. A. Steinthal, of Bradford; and the fittings by Mr. Montague Fordham, of 9, Maddox Street, W. Mr. Frank Hawkey, of Surbiton, was the builder, and Mr. Walter E. Hewitt, A.R.I.B.A., of 22, Buckingham Street, Strand, W.C., the architect, who also designed and superintended the laying-out of the grounds.

New Academy Rules. THE Royal Academicians have for some time had under consideration the regulations of their schools, and the deliberations of the council and the general assembly have resulted in the practical remodelling of the school laws, especially in so far as they affect the admission of students. One of the most important alterations is the abrogation of the law which prevented the admission of students above the age of twenty-three if painters, or twenty-five if sculptors or architects, a law which has only been in force since 1890. In future persons of any age will be eligible for admission to the schools, but no one who has passed his twenty-eighth year will be allowed to compete for a scholarship, prize or medal. Under the new rules painter candidates will have to submit a finished drawing in chalk from an antique statue, a drawing of a full-length figure from the life, a painting of a head, life-size, from the life, and a design for a composition. Should these be accepted he must execute in the Academy Schools other drawings. Sculptor candidates must submit a model the round of a figure 2ft. high from t antique, a model in the round of a figu from the life, a drawing of a figure fro the life, and a model of a compositio and as probationers similar works in t schools. Painter and sculptor probatione will have to pass in addition an examin tion in anatomy and perspective. The co ditions of entry for architects have also be revised, an examination in the history art being added. Successful probatione will, as under the old rules, be admitted students for three years, and for a furth period of two years subject to the passing an examination at the end of the first ter In this second examination the new rul make but one change of importance. Th student who wishes to remain at th Academy Schools for a further period of tw years must not only as before show com petent work in painting, drawing an modelling executed in the schools. Th painter must, in addition, make a painte sketch to fill a space of which the measure ments and architectural features will b given, and the sculptor must make a modelle design on similar lines and a sketch com position in the round. Design is to b further encouraged by the establishment c a school of design for the use of student practising composition, and the visitin Academicians are to set subjects, and afte wards examine and criticise the student efforts. The school of design is to be hun with selected examples, as guides to th students, of every school of compositio including portraiture, landscape, mural deco ration and architecture. Another new featur is a class to be established in the school o architecture, in which the students can prac tise the modelling of ornament under th joint direction of architect and sculpto visitors.

The Stratford Cottages. MR. SIDNEY LEE emphatic ally repudiates the recen allegations of vandalism at Stratford-on-Avon. He maintains that "despite all bold assertions to the contrary no rational archæological interests are jeo pardized." So far from destroying "histori Henley Street," the trustees and the Corpora tion, through the aid of Mr. Carnegie, are Mr. Lee declares, doing precisely the oppo site. They are permanently preserving in houses under their control all structural work which has proved on accurate examination to possess any kind of archæological interest. The process, it is observed, of modernizing Henley Street had in past years progressed very far, and of late, but for Mr. Carnegie's interposition, threatened a conspicuous advance. That process has now, however, been arrested, and "some careful and scholarly restoration has been made practicable."

Obituary.

Mr. James Watson, of the firm of Messrs. James Watson & Son, builders and quarry-masters, of Kirriemuir, died recently at the age of ninety-three years. After a partnership with Mr. David Milne, Mr. Watson commenced business as a builder on his own account. For the last twenty-three years his firm has leased East Quarry, Kirriemuir.

Mr. Francis Trimmer Gompertz died recently at Thames View, St. Margaret's, near Twickenham. He was the eldest son of Mr. Solomon Gompertz, and was born in 1831. He early turned his attention to the subject of classical architecture, and received the silver medal of the Royal Academy in 1856, as well as the gold medal of the Royal Academy in 1857, for his work in his designs for new municipal buildings, and was again

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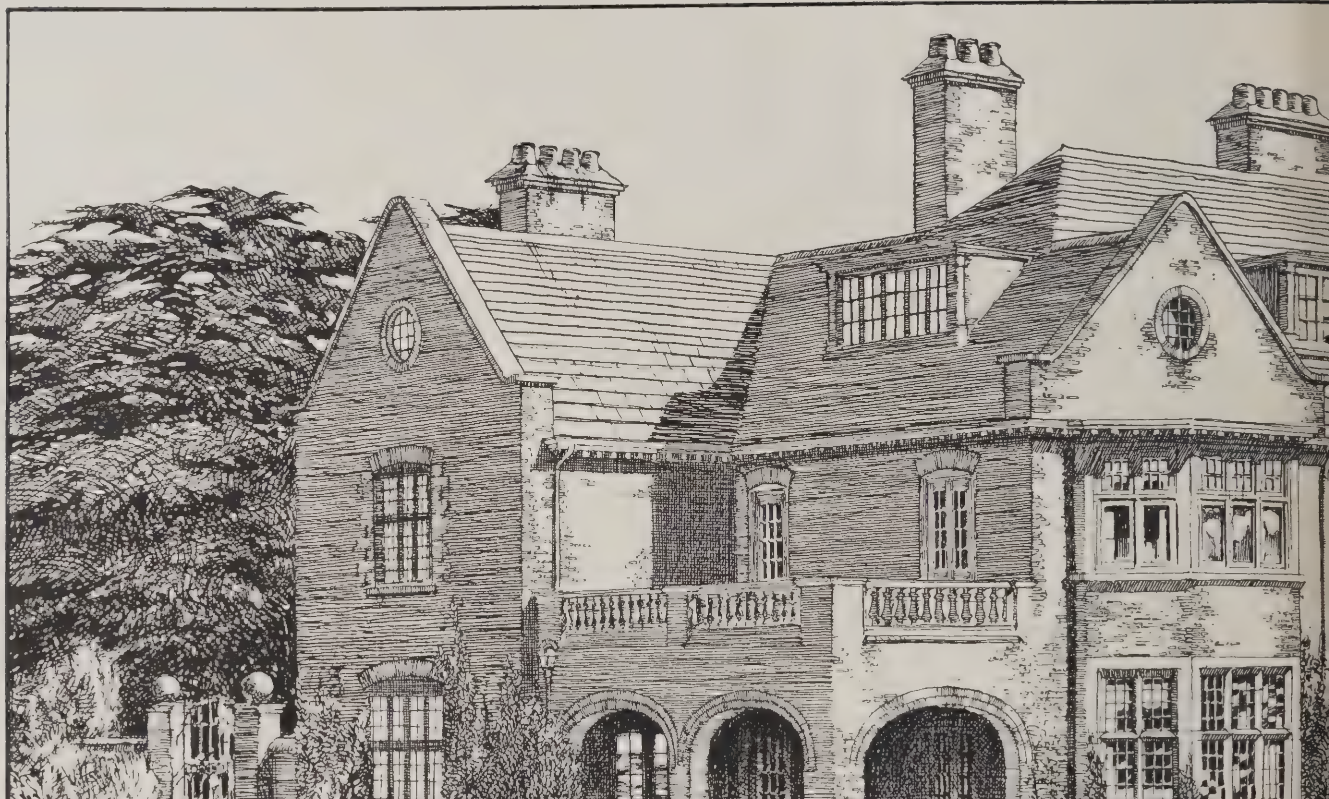
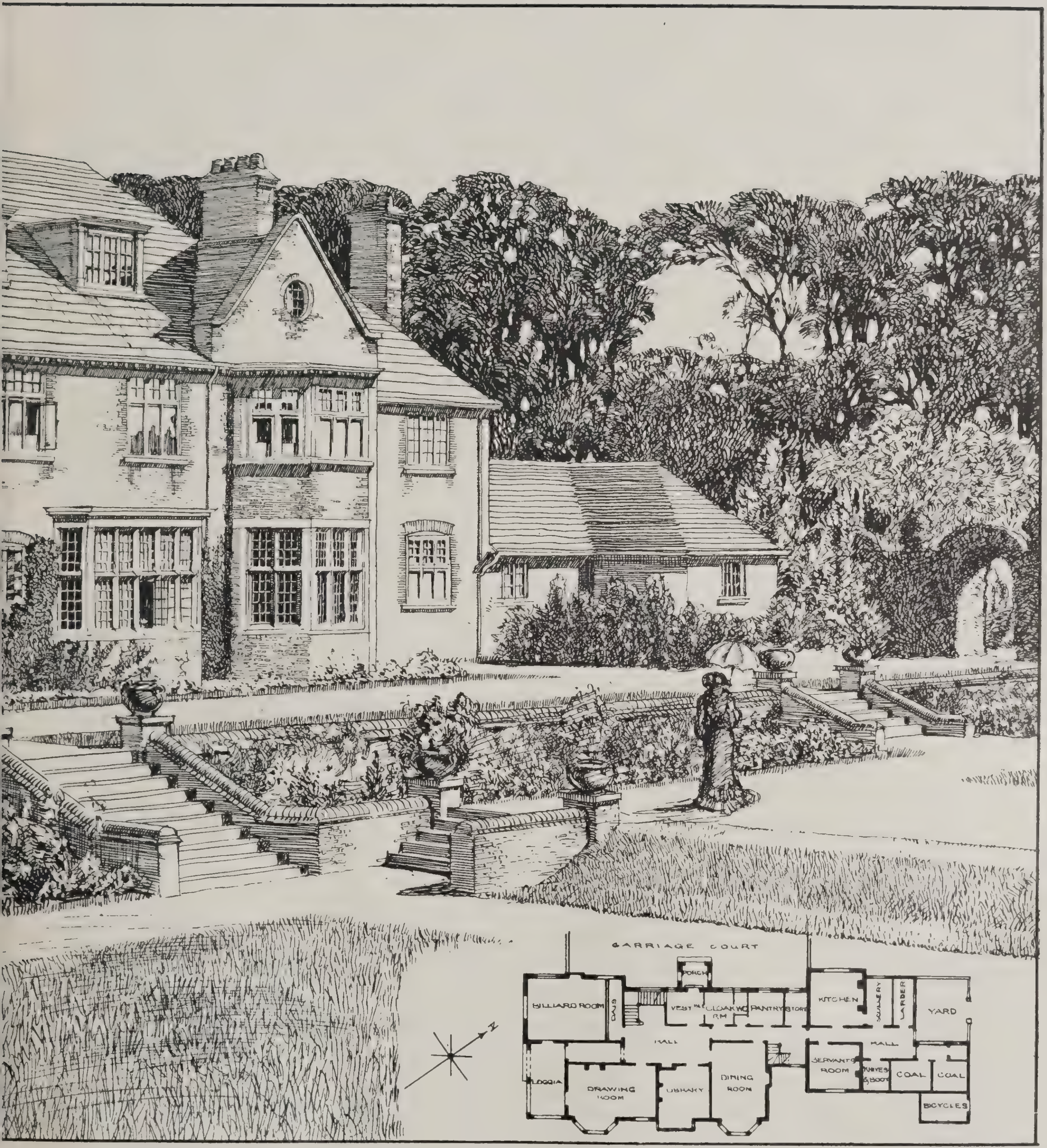

F.L.GRIGGS, delt MCMIII.

“Oakhill Drive,” Surbiton: Garden F



WALTER E. HEWITT, A.R.I.B.A., ARCHITECT.

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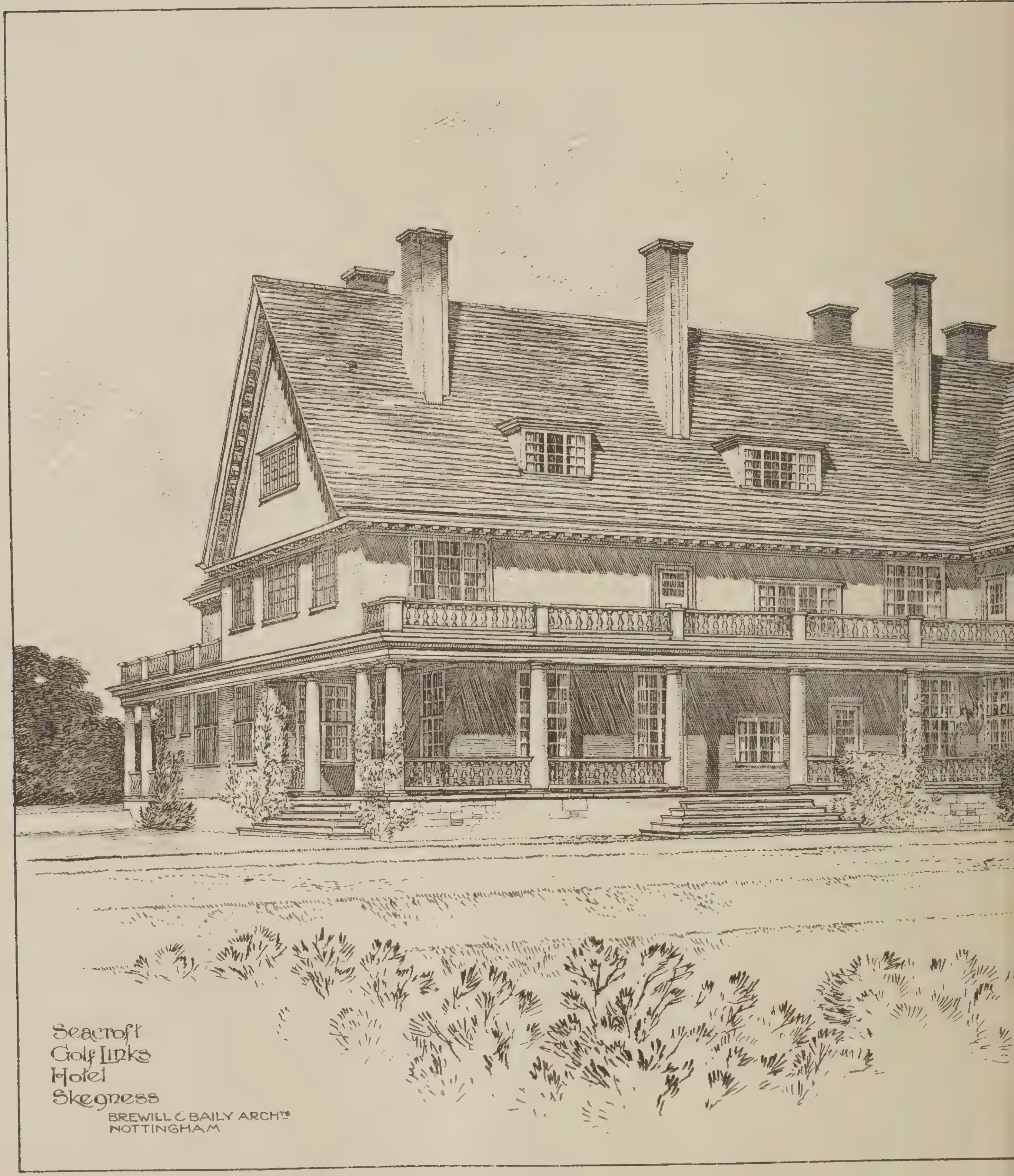

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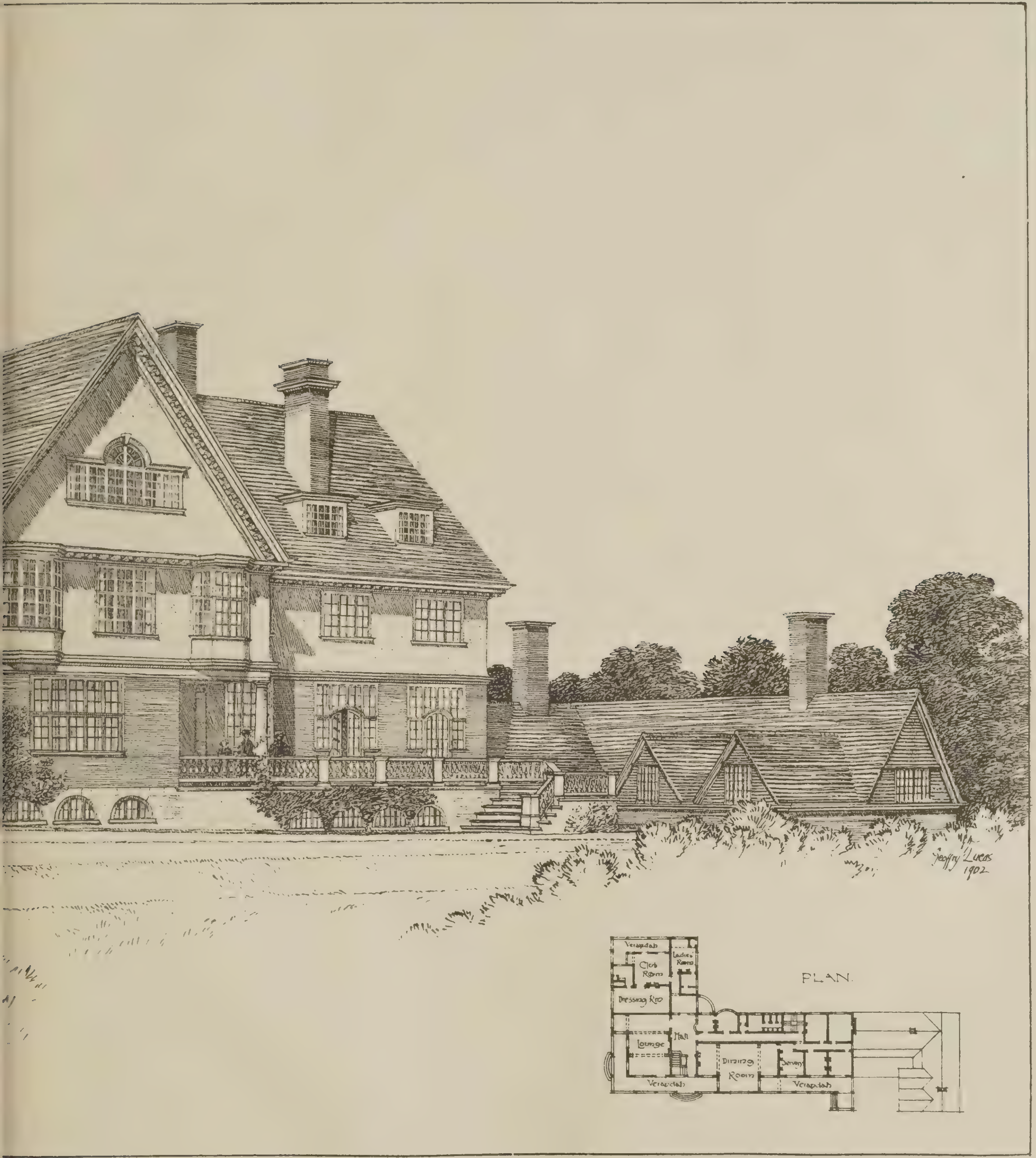

"PHOTO-LITHO." R. J. EVERETT & SONS, 56 LUDGATE HILL, E.C

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accorded in 1859 further first-class honours for his proposals for a cathedral in the mediæval Gothic style and for his proficiency in the same class of work. After his marriage he travelled much, in company with his wife, throughout the by-ways of England and in Southern Europe, and it is in a measure due to these extended travels that his valuable art collection was completed.

Mr. William Drake, of the building firm of Messrs. Cowley & Drake, of Willesden Green, N.W., died recently at the age of forty-nine years. Mr. Drake had been ailing for some months past, and had left his residence at Willesden Green for the sake of his health and was staying at his native place, Yealmpton, in South Devon. The partnership began with works in London and continued after 1880 at Willesden Green. In connection with the firm he had executed numerous important public works, which include the erection of the Court House, Willesden, for the Middlesex County Council; Salisbury Road and Pound Lane Board Schools, and the present erection of the Chamberlayne Wood Road Board School for the Willesden School Board, the Passmore Edwards Cottage Hospital for Willesden, and many others.

ANCIENT LIGHTS.

Text of the Bill.

THE following is the text of the Bill to amend the law relating to easements of light drawn up by the joint committee of the Royal Institute of British Architects and the Surveyors' Institution, and read a first ime in the House of Commons on June 22nd ast :—

Part I.—Preliminary.

1.—(1) This Act may be cited as The Ancient Lights Act, 19 .

(2) This Act shall come into operation on he day of 19 .

This Act does not extend to Scotland or reland.

Part II.—Definitions.

2.—(1) In this Act unless a contrary intention appears :—

(i.) Tenement includes land also any dwelling-house workshop or other building.

(ii.) Window includes any aperture for the purpose of admitting light.

(iii.) Street means and includes any highway road bridge lane mews footway square court alley passage whether a thoroughfare or not and a part of any such highway road bridge lane mews footway square court alley or passage.

(iv.) Owner includes every person in possession or in receipt of the rents and profits of a tenement and having an interest in such tenement not less than as a tenant thereof from year to year.

(v.) Occupier does not include a lodger.

(vi.) The tribunal of appeal means the tribunal of appeal constituted by this Act.

(2) In this Act if two tenements are so tuated that the owner of the first is entitled o a right to light passing over the second he first tenement is called a dominant tenement and the owner thereof a dominant wner and the second tenement is called a ervient tenement and the owner thereof a ervient owner and the first tenement is eferred to as being dominant over the econd and the second tenement as being ervient to the first.

Part III.—Limitation of the Amount of Light of a Dominant Owner.

3.—(1) From and after the commencement f this Act an owner of a dominant tenement shall subject as herein provided be entitled to such amount of light passing over the servient tenement as is reasonably necessary for the comfortable use and enjoyment of the dominant tenement if a dwelling-house or for its beneficial use and occupation if used as a place of business or for any other purpose than a dwelling-house and he shall not be entitled to any extraordinary amount of light necessary for any particular purpose trade or occupation.

(2) Nothing in this section shall confer on the owner of any dominant tenement over the tenement servient thereto any right to a greater amount of light than he would have possessed if this Act had not passed.

(3) This section shall not apply to a tenement in which a trade or occupation requiring an extraordinary amount of light has been continuously carried on for ten years during the continuance of such trade or occupation.

(4) This section applies only when the right of the dominant owner to the light passing over the servient tenement becomes absolute and indefeasible after the commencement of this Act.

Part IV.—Obstruction of Light by Notice in Place of Physical Obstruction.

4.—(1) The owner of a tenement which is not at the time servient to another tenement but over which such other tenement would in course of time become dominant may serve upon the occupier of and upon any other persons whom he knows to be interested in the tenement which would become so dominant a notice (in this Act called an obstruction to light notice).

(2) An obstruction to light notice shall be in writing in the form contained in the first schedule to this Act or as near thereto as circumstances will permit and shall be accompanied by a plan and section or elevation showing the windows the access of light through or to which is to be deemed obstructed.

(3) On and after the day of service of an obstruction to light notice the access of light to the windows mentioned in the obstruction to light notice shall be deemed to be obstructed in like manner as if the same were actually and physically obstructed.

(4) Any person aggrieved by an obstruction to light notice shall be entitled to the like relief so far as may be as he would have been entitled to if the access of light to the windows mentioned in the obstruction to light notice had been actually and physically obstructed by the person serving the notice.

(5) An obstruction to light notice shall subject to any relief which may be granted before the expiration of one year from the day of service thereof by a court of competent jurisdiction be deemed to be and shall have the like effect as an interruption within the meaning of section 3 of the Prescription Act 1832 which has been submitted to or acquiesced in for a year.

(6) On the sale of any tenement it shall be the duty of the vendor to disclose any obstruction to light notice which may have been served in respect of that tenement.

(7) It shall be the duty of any person who may receive an obstruction to light notice under this Act in respect of a tenement which he holds as occupier or lessee for a term of years or for lives to forward or deliver such notice forthwith to his next superior landlord.

Part V.—Right to Light passing over Streets.

5. No title shall be acquired by prescription under the Prescription Act 1832 or at common law or otherwise by the owner of any building which shall have been erected after the 31st day of December 1890 and which abuts on any street to a right to light passing over a tenement on the opposite side of that street.

Part VI.—Provisions for Certificated Plans of Buildings about to be taken down.

6.—(1) The owner of a building which is intended to be taken down and rebuilt may cause plans sections and elevations of such building to be prepared and may make application to the official surveyor for an inspection and survey of such building and for a certificate of the correctness of such plans sections and elevations and such application shall be dealt with as hereinafter provided.

(2) Every such application to the official surveyor shall be accompanied by a payment of the sum payable in accordance with the table of fees contained in the schedule to this Act and such sum shall be his fee for the inspection and survey and for the grant or refusal (as the case may be) of the certificate and it shall not be lawful for the official surveyor to demand or receive any further fee or payment in respect thereof.

(3) The official surveyor shall either grant a certificate that in his opinion the plans sections and elevations are correct or he shall refuse to grant such certificate in which case he shall state the grounds of such refusal and such certificate or refusal shall be in the form set out in the schedule to this Act with such modifications if any as the circumstances may require.

(4) Where the official surveyor refuses to grant a certificate applied for under this Act the applicant may if he think fit cause fresh plans sections and elevations to be prepared having regard to the objections stated in the form of refusal and may thereupon make a further application to the official surveyor to inspect and survey the building.

(5) If the official surveyor on re-inspection and re-survey be of opinion that the fresh plans sections and elevations are correct he shall grant a certificate under this Act with respect thereto.

(6) Where the official surveyor refuses to grant a certificate under this Act it shall be lawful for the applicant at any time within fourteen days after the date of such refusal to make application to the tribunal of appeal by way of appeal against such refusal and such appeal shall be accompanied by a copy of the form of refusal by the official surveyor.

(7) A certificate granted under this Act shall be conclusive evidence of the correctness of such plans sections and elevations in any actions or matter relating to the right of the owner of such building to light.

(8) In this section the official surveyor means in the case of a building situate in the county of London the district surveyor appointed to the district in which such building is situated and in the case of a building situated in any other county but not within a borough the county surveyor and in the case of a building situated in a borough the borough surveyor.

(9) The official surveyor shall keep a register of such drawings and shall thereupon be entitled to demand and receive the further fees set out in the schedule to this Act. Such drawings shall be deposited at the town or county hall and be open to public inspection on payment of a fee as set out in the schedule to this Act.

Part VII.—Statement of Claims arising out of Rights to Light.

7.—(1) Where a servient owner is erecting or intends to erect any new building or alter any existing building on his tenement he shall at the request of the dominant owner give facilities to the dominant owner or any person duly appointed on his behalf to inspect the plans elevations and sections of such intended new building or alteration (if any) and if there be no such plans elevations and sections shall give such information relating to such intended building or alteration to the dominant owner as the dominant owner may reasonably require.

(2) A dominant owner who has made such request as aforesaid may at any time within seven days after inspecting such plans elevations and sections or receiving such information serve upon the servient owner a notice of his objections or the terms on which he is willing to permit the servient owner to erect his building. Such notice shall be in writing and sent by registered post or served personally.

(3) Such notice shall contain particulars of the estate or interest claimed by the dominant owner in the dominant tenement and also the name and address of a surveyor who will act on behalf of the dominant owner in case a difference between him and the servient owner should arise.

(4) If the servient owner shall within seven days after the service on him of such notice serve the dominant owner with notice in writing that he accepts the terms of such notice there shall be deemed to be an agreement between the dominant owner and the servient owner that the servient owner will fulfil the requirements of such notice.

(5) If the servient owner is not willing to accept the terms of such notice he shall within seven days after the service on him of such notice serve notice in writing that he refuses the terms of such notice and shall state the name of a surveyor who will act on his behalf.

(6) In this section the expressions dominant owner and servient owner include respectively persons claiming to be such respectively.

8.—(*a*) Unless the servient owner shall have accepted the terms of the notice the two surveyors so appointed shall within ten days of the appointment of the last of them meet together and endeavour to determine the questions in dispute arising out of the said notice and shall before entering upon such questions appoint by writing under their hands an umpire to whom the matter shall be referred in case such arbitrators fail to agree.

(*b*) The umpire shall be a member of the Royal Institute of British Architects or of the Surveyors' Institution.

(*c*) The umpire shall view the site and the dominant and servient tenement and make his award within twenty-one days after the original time appointed by this Act for making the award by the arbitrators has expired.

9. The arbitrators or their umpire may by their award decide any of the following matters namely:—

(*a*) The right of the owner of the tenement who proposed to build to carry out his intended works.

(*b*) The alteration if any necessary to be made in carrying out the intended new buildings or alterations so as to prevent or lessen obstruction to the lights of the tenements as set out in the notice of objection.

(*c*) The amount if any of compensation of every description to be made to the owner lessee or occupier.

(*d*) The alterations if any to the adjoining premises by light reflecting surfaces enlargement of lights heightening of premises or other means.

(*e*) The amount of costs to be paid by either party.

(*f*) Any other matter necessary to enable the difference between dominant and servient owners to be determined.

10. In the event of either party neglecting to appoint a surveyor within the prescribed period or of the unwillingness of the umpire appointed to act and no other umpire being agreed upon within a period of ten days from his refusal to act either party may apply to the president for the time being of the Royal Institute of British Architects or the president for the time being of the Surveyors' Institution who shall forthwith appoint an umpire.

Appeal from Surveyors to Tribunal of Appeal.

11. Any award given by such arbitrators or their umpire shall be conclusive and shall not be questioned in any court with this exception namely that either of the parties to the difference may appeal therefrom to the tribunal of appeal within fourteen days from the date of the delivery of the award and the tribunal of appeal may subject as hereafter in this section mentioned rescind the award or modify it in such manner as it thinks just.

Reference of Dispute to High Court.

12. If the appellant from any such award where the amount awarded exceeds £500 in money damages or cost of works or where the interference with the proposed works exceeds £500 refuses to accept the decision of the tribunal of appeal and gives security to be approved by the members of that tribunal to prosecute his appeal within one month from the publication of such decision and to abide the event thereof all proceedings in the tribunal of appeal shall thereupon be stayed and the appellant may bring an action in the High Court against the other party to the difference.

Settlement of an Issue to determine Dispute.

13. The plaintiff in such action shall deliver to the defendant an issue without pleadings whereby the matters in difference between them may be tried and the form of such issue in case of dispute or in case of the non-appearance of the defendant shall be settled by the High Court and such action shall be prosecuted and issue tried in the same manner and subject to the same incidents in and subject to which actions are prosecuted and issues tried in the Commercial Court of the High Court or as near thereto as circumstances admit.

Special Case.

14. If the parties to any such action agree as to the facts a special case may be stated for the opinion of the High Court and any case so stated may be brought before the Court in like manner and subject to the same incidence in and subject to which other special cases are brought before such Court or as near thereto as circumstances admit and any costs that may have been incurred in the tribunal of appeal by the parties to such action as is mentioned in this section shall be deemed to be costs incurred in such action and be payable accordingly.

Part VIII.—Constitution of Tribunal of Appeal.

15. For the purposes of this Act a tribunal of appeal shall be constituted as follows:—

Three members shall be barristers-at-law and shall be appointed by a Secretary of State.

Three members shall be appointed by the Council of the Royal Institute of British Architects.

Three members shall be appointed by the Council of the Surveyors' Institution.

Duration of Office.

16. A member of the tribunal of appeal shall be appointed for a term of one year and at the expiration of his term of office shall be eligible for reappointment.

Removal of Members.

17. The Lord Chancellor may remove for inability or misbehaviour any member of the tribunal of appeal.

The tribunal of appeal may act notwithstanding any vacancy in their body but not less than three members of whom one shall be a barrister-at-law shall attend at the hearing of any case.

18. The tribunal of appeal may hold sittings in any part of England in such place or places as may be most convenient for the determination of proceedings before them.

Vacancies to be supplied.

19. Upon the occurrence of any vacancy in the tribunal of appeal or during the temporary absence through illness or other unavoidable cause of any member thereof a Secretary of State the Council of the Royal Institute of British Architects or the Council of the Surveyors' Institution (as the may be) whichever of them shall have appointed the member of the tribunal whose place shall be vacated shall appoint forthwith a fit person to be a member (either temporary or permanent) of the tribunal in place of the member whose place is vacated or who is temporarily absent as aforesaid.

Remuneration of Members of Tribunal.

20. There shall be paid to each member of the tribunal of appeal such fees as a Secretary of State shall with the concurrence of the Treasury determine.

Officers, &c., of Tribunal.

21. It shall be lawful for the tribunal of appeal to appoint such clerks officers and servants as they may find necessary who shall be paid such salaries as shall be determined by a Secretary of State with the concurrence of the Treasury and to provide offices.

22. The members forming for the purposes of each case the tribunal of appeal shall personally visit the tenements both of the appellants and the respondents.

Jurisdiction of Tribunal.

23. The tribunal of appeal shall subject to the provisions of this Act have jurisdiction and power to hear and determine appeals referred to them under this Act and shall have power to determine whether and if so to what extent the proposed new buildings should be amended or the dominant premises altered.

24. For all the purposes of and incidental to the hearing and determination of any appeal the tribunal shall (subject to any rules of procedure duly made) have power to hear the parties interested either in person or by counsel as they may think fit and to administer oaths and to hear and receive evidence and require the production of any documents or books and to confirm or reverse or vary any decision and make any such order as they may think fit and the costs of any of the parties to the appeal shall be in the discretion of the tribunal of appeal.

Regulations as to Procedure and Fees.

25. The tribunal of appeal may from time to time subject to the approval of the Lord Chancellor make regulations consistent with the provisions of this Act as to the procedure to be followed in cases of appeal to the tribunal of appeal including the time and notice of appeal and as to fees to be paid by appellants and other parties.

Enforcement of Decision of Tribunal.

26. Any order of the tribunal of appeal may be enforced by the High Court as if it had been an order of that court.

27. In any action by a dominant owner against a servient owner in which an injunction is claimed notwithstanding that an injunction may by an interlocutory order have been already granted upon the application by motion of the servient owner either party may apply to a judge of the High Court either to hear such action with assessors or to refer the matter to arbitration in accordance with the provisions hereinbefore contained. If on the hearing of such application the judge shall be of opinion that the claim may be reasonably satisfied by damages he may on his own motion refer the case to arbitration and if on such hearing he shall be of opinion that the action for an injunction has been unreasonably or unnecessarily commenced he may order the party bringing such action to pay the costs of the defendant on such scale as he may deem fit.

Complete List of Contracts Open.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	BUILDING:		
July 9	Abercynon, Wales—Assembly Hall, &c.	Dowlais Workmen's Institute Committee.	F. Gibson, Architect, Mountain Ash.
„ 9	Baildon, Yorks—Residence	——	S. Bradley, Architect. Yorkshire Bank Chambers, Shipley.
„ 9	Bristol—Refronting Premises	Sanitary Committee	T. H. Yabbicom, 63 Queen Street, Bristol.
„ 9	Girlington, Yorks—Six Small Houses	——	Walker & Collinson, 227 Swan Arcade, Bradford.
„ 9	Halifax—Boiler House, &c.	——	A. G. Dalzell. 15 Commercial Street, Halifax.
„ 9	Londonderry—Masonry	Corporation	City Surveyor, Town Hall, Londonderry.
„ 9	Alexandra Park—Glasshouses	Parks, &c. Committee	City Architect. Town Hall, Manchester.
„ 10	Horden Colliery—150 Cottages	Collieries. Ltd.	E. W. Lyall. 39 Northgate, Darlington.
„ 10	Huddersfield Twelve Cottages	Berry Brow Co-op. Soc., Ltd.	Secretary. Society's Offices. Huddersfield.
„ 10	Stairfoot, near Barnsley—Five Houses	A. Kay	E. W. Dyson, 14 Market Hill, Barnsley.
„ 10	St. Austell—Schoolroom, &c.	——	J. Mutton, Charlestown, St. Austell.
„ 10	Leicester—Car Depot, &c.	Tramways Committee	E. G. Mawbey, Engineer, Town Hall, Leicester.
„ 11	Woolwich—Pulling Down and Rebuilding Club	Labour Club and Institute	C. W. Brooke, 63 Finsbury Pavement, E.C.
„ 11	Garndiffaith, Wales—Alteration, &c., to Chapel	——	Fisher & Son, Architects, Club Chambers, Pontypool.
„ 11	Langley Bridge, Sussex—Widening Bridge	East Sussex C.C.	F. J. Wood, County Surveyor, County Hall, Lewes.
„ 11	Great Yarmouth—Five Cottages	H. R. Atkins	C. G. Baker, Architect, Town Hall Chambers, Great Yarmouth.
„ 11	Resolven, Wales—Chapel	——	Llewellin, Smith & Davies, Architect, Aberdare.
„ 11	Stainland, Yorks—Six Dwelling Houses	——	C. F. L Horsfall & Son, Architects, Lord St. Chambers, Halifax.
„ 11	Sedgefield—Infectious Diseases Hospital	Visiting Committee	W. Crozier, County Architect, Shire Hall, Durham.
„ 11	Darlington—Repairs, &c., to Church Spire	——	Mr. Michie, 63 Northgate, Darlington.
„ 11	Blackmill—Isolation Hospital	Hospital Committee	H. D. Williams, Committee's Architect, Post Office Bldgs., Bridgend.
„ 11	Maesycymmer, Mon—Improvements, &c., to Chapel	Trustees	W. L. Jones, Secretary, Llettygwilym, Hengoed.
„ 12	Belfast—Two Villas	——	T. Houston, Architect, King's Court, Wellington Place, Belfast.
„ 12	Garvaghy, Banbridge, Ireland—Church	Presbyterian Church Committee	Rev. D. Baird, Garvaghy Manse, Banbridge.
„ 13	Lismore, Ireland—Creamery	Co-op. Agricultural and Dairy Society, Ltd.	W. Hartnett, Secretary, Chapel Street, Lismore.
„ 13	Pembroke Dock, Wales—Laboratory	County Schools Governors	D. E. Thomas, Architect, Victoria Place, Haverfordwest.
„ 13	Rhayader, Radnorshire—House. &c.	Birmingham Corporation	J. Mansergh & Sons, 5 Victoria Street, Westminster.
„ 13	Ynyshir, Wales—Converting School	Ystradyfodwg School Board	J. Rees, Architect, Hillside Cottage, Pentre.
„ 13	Abertillery, Mon—Classrooms	Aberystruth School Board	R. A. Roberts, Architect, Abercarn, Mon.
„ 13	Carlisle—Alterations to Court	County Property Committee	G. D. Oliver, County Architect, Carlisle.
„ 13	Cwmpark, Wales—School Works	Ystradyfodwg School Board	J. Rees, Hillside Cottage, Pentre.
„ 13	Levenshulme, near Manchester—Cash Office, &c.	Corporation	J. M. M'Elroy, General Manager, 55 Piccadilly, Manchester.
„ 13	London, N.W.—Repairs, &c., to Dispensary	St. Marylebone Guardians	A. S. Snell, 22 Southampton Buildings, Chancery Lane, W.C.
„ 14	Bedlinog, Wales—Thirty-four Houses	Garthgynyd Building Club	P. V. Jones, Architect, Hengoed.
„ 14	London, S.E.—Four Block Dwellings	London County Council	Architect's Dept. (Housing Section), 19 Charing Cross Road, W.C.
„ 14	Merthyr, Wales—Walls, &c.	Urban District Council	T. F. Harvey, Council's Engineer, Town Hall. Merthyr.
„ 14	Morley, Yorks—Mills	——	T. A. Buttery & S. B. Birds, Architects, Queen Street, Morley.
„ 14	Sowerby Bridge, Yorks—Additions to Works	M. Sykes & Son	Jackson & Fox, 7 Rawson Street, Halifax.
„ 14	Neasden—Brick Wall	Willesden District Council	O. C. Robson, Council's Engineer, Public Offices, Dyne Road Kilburn, N.W.
„ 14	Urmston, near Manchester—Police Station, &c.	Lancashire County Council	H. Littler, Architect, County Offices, Preston.
„ 14	Accrington—Bank	——	H. Rose, 15 Canon Street, Accrington.
„ 14	Biggleswade—Vagrants' Ward	Guardians	J. O. Jones, Shortmead Street, Biggleswade.
„ 14	Brierfield, Lancs—Police Station	Lancashire County Council	H. Littler, Architect, County Offices, Preston.
„ 14	London, S.E.—Four Blocks of Dwellings	Bermondsey Borough Council	F. Ryall, Town Clerk, Town Hall, Spa Road, S.E.
„ 15	Dorset—Repairing, &c., Police Stations	Joint Committee	W. J. Fletcher, County Surveyor's Office, Wimborne.
„ 15	Lurgan, Ireland—Eighteen Cottages	Moria Rural District Council	W. J. Corner, Clerk, Workhouse, Lurgan.
„ 15	Porthcawl, Wales—Hotel	T. Williams	Cook & Edwards, Architects, Masonic Buildings, Bridgend.
„ 15	Dublin—Laundry, &c.	Board of Guardians	Mr. Morris, 53 Cabra Road, Dublin.
„ 15	Trelewis, Treharris—Pair of Cottages	——	W. Dowdeswell, Architect, John Street, Treharris.
„ 15	Kinsale—Six Cottages	Rural District Council	J. Murphy, Council's Clerk, Boardroom, Workhouse, Kinsale.
16	Springburn—Library	Corporation	W. B. Whitie, 196 St. Vincent Street, Springburn.
„ 16	Wallsall—Buildings at Workhouse	Guardians	H E. Lavender, Architect, Bridge Street, Walsall.
„ 16	Waldon-le-Dale—Church	——	Vicar, Vicarage, Walton-le-Dale.
„ 16	Seabrook, Kent—Police Staton Works	——	F. W. Ruck, 86 Week Street, Maidstone.
„ 16	Cheadle, near Stoke-on-Trent—Hospital	Rural District Council	F. T. Inskip, Surveyor, Brookhouse, Cheadle.
„ 16	Lightcliffe, Yorks—Two Houses	——	Sharp & Waller, 32 Bradford Road, Brighouse.
„ 17	Maidstone—Enlargement of Post Office	Commissioners of H.M. Works, &c.	Secretary, H.M Office of Works, Storey's Gate, S.W.
„ 17	Bodffordd—Alterations, &c., to School	School Board	J. Owen, Architect, Menai Bridge.
„ 17	Preston—Abattoir	Corporation	Borough Surveyor, Town Hall, Preston.
„ 18	Ashburton—Additions to Grammar School	——	R. E. Tucker, Clerk to Governors, Ashburton.
„ 18	Gloucester—Shops and Premises	Co-operative Society, Ltd.	Secretary, Society's Office, Brunswick Road, Gloucester.
„ 18	Smallburgh, Norfolk—Alterations, &c., to Workhouse	Guardians	J. T. Lee, 26 Great James Street, Bedford Row, W.C.
„ 20	Ton, Pentre, Wales—Hall	Workmen's Institute Building Committee.	J. Rees, Architect, Pentre, Wales.
„ 20	East Ham—School Buildings	School Board	R. L. Curtis. 120 London Wall, Moorgate Street, E.C.
„ 21	Tooting, S.W.—Sorting Office	Commissioners of H.M. Works, &c.	J. Wager, H.M. Office of Works, Storey's Gate, S.W.
„ 21	London, S.W.—Coach House, &c.	Commissioners of H.M. Works, &c.	J. B Westcott, H.M. Office of Works, Storey's Gate, S.W.
„ 21	Buckfastleigh—Pointing, &c., to Church Spire	——	A. Warren, Surveyor, Buckfastleigh.
„ 22	London, S W.—Superstructure of Admiralty Buildings	Commissioners of H.M. Works, &c.	Secretary, H. M. Office of Works. Storey's Gate, S.W.
„ 23	Westcliff—Southend-on-Sea—Two Houses	Essex County Council	F. Whitmore. County Architect, Duke Street, Chelmsford.
„ 23	Grays—Alterations, &c., to Police Station	Essex County Council	F. Whitmore. County Architect, Duke Street, Chelmsford.
„ 27	Dartford—Additions, &c., to Workhouse	Guardians	G. H. Tait, Architect. Lowfield Street, Dartford.
„ 29	Chipping Ongar—Children's Homes	Hackney Union Guardians	W. A. Finch, 76 Finsbury Pavement, E.C.
Aug. 4	Watford—Household Management Centre	School Board	W. H. Syme, 4 High Street, Watford.
„ 4	Grayne—Restoration of Church	——	Arnold, Baker & Day, Solicitors. The Precincts, Rochester.
„ 4	Poynings, Hangleton—Additions, &c., to Churches	——	E. H. L. Barker, 146 St. Owen's Street, Hereford.
„ 4	Llanelly—Villa	——	W. Griffith, Falcon Chambers, Llanelly.
„ 4	Shrewsbury—Station Buildings	London & North-Western Rly. Co.	Joint Engineer, Woodside Station, Birkenhead.
	ENGINEERING:		
July 9	Leek, Staffs—Electric Lighting Plant	Urban District Council	Burstall & Monkhouse, 14 Old Queen Street, Westminster, S.W.
„ 9	Swansea—Crane	Harbour Trustees	A. O. Shenck, Trustees' Engineer, Harbour Office, Swansea.
„ 10	Bath—Waterworks	Waterworks Committee	W. Fox & R. A. Tatton, 5 Victoria Street, Westminster, S W.
„ 10	Bath—Valves, &c.	Waterworks Committee	W. Fox & R. A. Tatton, 5 Victoria Street, Westminster, S.W.
„ 11	Ballymena, Ireland—Boiler	Guardians	C. Johnston, Clerk. Workhouse, Ballymena.
„ 11	Kasr-el-Aini, Egypt—Electric Light Installation	——	Central Office, Sanitary Department, Ministry of Interior, Cairo.
„ 11	Aberdare—Call Bells	Urban District Council	Surveyor's Office, Town Hall, Aberdare.
„ 13	Hindley, Lancs Retort Settings, &c.	Urban District Council	H. O Timmins, Manager, Gasworks. Hindley.
„ 13	Andover—Waterworks	Town Council	Borough Surveyor, High Street, Andover.
„ 14	London, N.W.—Carbons	St Pancras Borough Council	Electricity Department Offices, 57 Pratt Street, N.W.
„ 14	West Ham—Tramway Cables	Town Council	J. K. Bock, Borough Electrical Engineer, Abbey Mills, West Ham.
„ 14	Keighley—Weir, &c.	Joint Hospital Board	H. M. Butterfield, 3 Laythorpe Terrace, East Morton, near Bingley
„ 14	Ipswich—Electricity Meters	Corporation	W. Bantoft, Town Clerk, Town Hall, Ipswich.
„ 14	London, N.W.—Electric Jenny, &c.	St. Pancras Borough Council	Chief Clerk, Electricity Department, 57 Pratt Street, N.W.
„ 14	London, N.W.—Cables	St. Pancras Borough Council	Chief Clerk, Electricity Department, 57 Pratt Street, N.W.
„ 14	Greenwich—Pier, &c.	London County Council	Engineer's Department, County Hall, Spring Gardens, S.W.
„ 14	Leavesden and Caterham—Hot-water Apparatus	Metropolitan Asylums Board	T. D. Mann, Clerk. Board's Offices, Embankment, E.C.
„ 15	London, W.—Arc Lamps &c.	Hammersmith Borough Council	G. G. Bell, 57 Fulham Palace Road, W.
„ 17	London, E.C.—Pontoon Landing Stage	Bengal-Nagpur Rlwy. Co., Ltd.	Company's Offices, 132 Gresham House, E.C.
„ 17	Sheffield—Heating Apparatus and Two Boilers	Education Committee	J. F. Moss, Secretary, Education Office, Leopold Street, Sheffield.
„ 18	Brigg, Lincs—River Cleansing	Ancholme Drainage, &c., Commissioners.	A. Atkinson, Engineer to Commissioners, Brigg.
„ 19	Weymouth—Electric Lighting Plant	Corporation	Sir R. N. Howard, Town Clerk, Municipal Offices, Weymouth.
„ 20	Pollenza—Lighthouse Building	——	Ministry of Agriculture, Industry and Public Works, Madrid.
„ 21	London, E.—Pipework, &c	Stepney Borough Council	A. Wright, 27 Osborn Street, Whitechapel.
„ 21	Mountain Ash, Wales—Laying Gas-mains	Urban District Council	J. Williams, Town Hall, Mountain Ash.
„ 22	North and South Shields—Landing Stages	Tyne Improvements Commissioners.	R. Unwin, Commissioners' Offices, Bewick St., Newcastle-on-Tyne
„ 25	Liverpool—Protective Mantle on River Bank	——	R. P. Allenby, 16 Cook Street, Liverpool.

Complete List of Contracts Open—*continued.*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	ENGINEERING—*cont.*		
July 29	Pietermaritzburg—Six Electric Tramcars	Corporation	Mordey & Dawbarn, 82 Victoria Street, S.W.
,, 30	Manchester—Machinery, &c.	Baths and Washhouses Committee.	City Architect, Town Hall, Manchester.
Aug. 19	Port Adelaide—Railway Materials	——	Chief Mechanical Engineer, Islington, South Australia.
Sept. 2	Corrientes—Waterworks	——	Engineer-in-Chief, Rividavia 1,255, Buenos Aires.
,, 12	Sydney—Electric Tramway Generating Set	Railway Commissioners	Agent-General for New South Wales, 9 Victoria Street, S.W.
,, 28	Launceston Tasmania—Electric Meters	——	J. Terry & Co., 7 Great Winchester Street, E.C.
Oct. 30	Marina, Upper Barracca, Malta—Lift	Crown Agents for the Colonies	Receiver-General and Director of Contracts, Valletta, Malta.
	IRON AND STEEL:		
July 9	Salford—Stores	Gas Committee	W. W. Woodward Engineer, Town Hall, Bloom Street, Salford.
,, 10	Bath—Cast-iron Pipes	Waterworks Committee	W. Fox & R. A. Tatton, 5 Victoria Street, Westminster, S.W.
,, 10	London, S.W.—Gas-piping	Admiralty	Director of Navy Contracts, Admiralty, Whitehall, S.W.
,, 10	Valletta, Malta—Pipes and Castings	——	Crown Agents for the Colonies, Downing Street, London.
,, 15	Amsterdam—Rails, &c.	Netherland Minister for Colonies	Mart. Nijhoff, Bookseller, 18 Nobelstraat, The Hague.
,, 15	Dublin—Pipes	Waterworks Committee	S. Hasty, City Engineer, City Hall, Dublin.
,, 15	Netherlands—Rails, Bolts, &c.	——	M. Nichoff, 18 Nobelstraat, The Hague.
,, 15	Christiana, Norway—Telegraph, &c., Materials	Norwegian State Railways	Telegrafinspektörens, Kontor, No. 8, Steners Gade, Christiania.
,, 18	Burnley—Pipes	Urban District Council	S. Edmondson, 18 Nicholas Street, Burnley.
,, 22	Madrid—Telegraph Wire	State Telegraphs	Chief, Telegraph Section, Directorate-General of Posts and Telegraphs, Carretas 10, Madrid.
,, 28	Glanville, South Australia—Steel Bars	S. Australian Government	Chief Storekeeper, Public Stores, Port Adelaide.
	PAINTING AND PLUMBING:		
July 9	Walsall—Painting Workhouse	Guardians	Master of Workhouse, Walsall.
,, 9	Leeds—Painting, Cleansing, &c., Library	Corporation	City Engineer, Municipal Buildings, Leeds.
,, 9	Salford—Paints, Brushes, Lead Pipe, &c.	Gas Committee	W. W. Woodward, Engineer Town Hall, Bloom Street, Salford.
,, 10	Durham—Whitewashing, &c.	Guardians	J. Gibson, Clerk, The College, Durham.
,, 11	Keighley—Painting Schools	School Board	H. Midgley, Clerk, School Board Offices, Keighley.
,, 13	London, W.—Painting, Repairs, &c.	St. Marylebone Guardians	A. S. Snell, 22 Southampton Buildings, Chancery Lane, W.C.
,, 13	London, N.W.—Painting, &c., Dispensary	Guardians	A. S. Snell, 22 Southampton Buildings, Chancery Lane, W.C.
,, 13	Bristol—Painting, &c., Schools	Education Committee	W. A. Adams, Secretary, Guildhall, Bristol.
,, 13	Huddersfield—Painting, &c., School	School Board	G. Gaunt, Clerk, School Board Offices, Peel Street, Huddersfield.
,, 13	Leeds—Painting, &c., Schools	School Board	W. Packer, Clerk, School Board Offices, Leeds.
,, 14	Merthyr Tydfil—Painting, &c.	Urban District Council	Surveyor's Office, Town Hall, Merthyr Tydfil.
,, 15	Dublin—Plumbing, &c.	Board of Guardians	Mr. Morris, 53 Cabra Road, Dublin.
,, 17	Sheffield—Painting, Distempering and Alphalting	Corporation	J. F. Moss, Secretary, Education Committee, Leopold St., Sheffield.
,, 17	Preston—Painting	Corporation	Borough Surveyor, Town Hall, Preston.
,, 18	Manchester—Painting, &c., Lavatories	Sanitary Committee	City Surveyor, Town Hall, Manchester.
	ROADS AND CARTAGE:		
July 9	Stockport—Street Works	Highways & Sewers Committee	J. Atkinson, Borough Surveyor, St. Petersgate, Stockport.
,, 9	Cheltenham—Wood-block Pavement	Corporation	J. S. Pickering, Borough Surveyor, Municipal Offices, Cheltenham.
,, 9	Cheltenham—Kerbs	Corporation	J. S. Pickering, Borough Surveyor, Municipal Offices, Cheltenham.
,, 9	Southend-on-Sea Making-up Road	Corporation	E. J. Elford, Borough Surveyor, Southend-on-Sea.
,, 10	Halesworth, Suffolk—Granite	Urban District Council	C. H. White, Clerk, Halesworth, Suffolk.
,, 10	Banchory, Scotland—Macadamising	——	J. Ferries, Burgh Surveyor, Banchory.
,, 10	Portsmouth—Asphalt Pavement	Town Council	A. Hellard, Clerk, Town Hall, Portsmouth.
,, 13	Ashton-upon-Mersey—Making-up Street	Urban District Council	F. Hutton, Surveyor, Public Hall, Ashton-upon-Mersey.
,, 13	Dewsbury—Paving, &c.	Corporation	Borough Surveyor, Town Hall, Dewsbury.
,, 13	London, N.—Tar Paving	Borough Council	J. P. Barber, Town Hall, Upper Street, N.
,, 13	Markgate, &c. Herts—Kerbing, &c.	Hertfordshire C.C.	U. A. Smith, 41 Parliament Street, Westminster, S W.
,, 13	Withington, Lancs—Tar Macadam Repairs	Rural District Council	A. H. Mountain, Council's Surveyor, Withington, Lancs.
,, 13	Alsager—Private Street Works	Urban District Council	G. Sale, Council's Surveyor, Crewe Road, Alsager.
,, 13	Hale, Cheshire—Making-up Road	Urban District Council	T. Blagburn, Surveyor Council Offices, Ashley Road, Hale.
,, 13	Leamington—Road Stone	Corporation	Borough Surveyor, Town Hall, Leamington.
,, 14	Barking, Essex—Making-up, &c., Roads	Urban District Council	C. F. Dawson, Council's Surveyor, Public Offices, Barking.
,, 14	London, S.W.—Repaving	London County Council	Engineer's Department, County Hall, Spring Gardens, S.W.
,, 15	Blackpool—Tar Asphalting	Highways Committee	J. S. Brodie, Borough Engineer, Town Hall, Blackpool.
,, 15	Northfleet, Kent Materials	Urban District Council	Surveyor Court House, Southend.
,, 15	Rochester—Materials	Corporation	W. Banks, City Surveyor, Rochester.
,, 15	London, W.—Remodelling Drainage, Paving, &c.	St George's Union Guardians	E. T. Hall, 54 Bedford Square, W.C.
,, 15	Hailsham, Sussex—Steam Rolling	Rural District Council	E. Catt, 17 London Road, Hailsham.
,, 15	Rangoon, India—Road	Port Commissioners	Gillanders, Arbuthnot & Co., 5 Clive Street Calcutta.
,, 17	Pentre, Glamorgan—30 Carts	Urban District Council	W. J. Jones, Engineer, Council Offices, Pentre, Glam.
,, 17	Preston—Paving, &c.	Corporation	Borough Surveyor, Town Hall, Preston.
,, 20	Dewsbury—Granite Setts	Corporation	Borough Surveyor, Town Hall, Dewsbury.
,, 21	Wembley—Kerbing, &c.	Urban District Council	W. Bagshaw, Clerk, Public Offices, Wembley.
	SANITARY:		
July 9	Swinton, Lancs—Sewers, &c.	Urban District Council	H. Entwistle, Surveyor, Council Offices, Swinton.
,, 9	Andover—Sanitary Work	Grammar School Governors	P. E. J. Talbot, Clerk to Governors, Bridge Street, Andover.
,, 9	Edinburgh—Sewer	Magistrates and Council	Burgh Engineer, City Chambers, Edinburgh.
,, 10	Dringhouses, Yorks—Sewers	Bishopthorpe R.D.C.	Fairbank & Son, Engineers, Lendal Chambers, Lendal, Yorks.
,, 11	Newcastle-under-Lyme, Staffs—Sewerage, &c., Works	Rural District Council	A. E. Jones, Engineer, Brunswick Street, Newcastle-under-Lyme.
,, 13	Frinton-on-Sea, Essex—Extension of Sewer	Urban District Council	Busby, Son & Nichols, 11 Victoria Street, Westminster, S.W.
,, 13	Hastings—Sewers	Corporation	P. H. Palmer, Borough Engineer, Town Hall, Hastings.
,, 14	Bingley, Yorks—Removal of Nightsoil, &c.	Urban District Council	T. W. Cragg Sanitary Inspector Wilsden.
,, 14	Kensal Green, N.W.—Sewers	Willesden District Council	O. C. Robson, Council's Engineer, Public Offices, Dyne Road, Kilburn, N.W.
,, 15	Dublin—Drainage, &c.	Board of Guardians	Mr Morris, 53 Cabra Road, Dublin.
,, 16	London, W.—Stoneware Pipes, Cement	Ealing Town Council	A. E. Lewis, Manager, Electricity Department, Town Hall, Ealing.
,, 16	Lingfield, Surrey—Sewerage, &c., Works	Godstone R.D.C.	A. Williams & Son, 14 Victoria Street, Westminster, S.W.
,, 23	Trowbridge—Sewage-Disposal Works	Urban District Committee	W. H. Stanley, Engineer, Market House Chambers, Trowbridge.
,, 25	Woodhall Spa, Lincs—Sewers, &c.	Urban District Council	E. Bolton, Surveyor, Woodhall Spa, Lincs.
	TIMBER:		
July 9	Salford—Timber	Gas Committee	W. W. Woodward, Engineer, Bloom Street Salford.
,, 13	Lincoln—Wood Fencing	Sanitary Committee	R. A. Macbrair, City Surveyor, Corporation Offices, Lincoln.
,, 21	London, N.—Firewood	Guardians	F. Shelton, Clerk, The Grange, White Hart Lane, Tottenham.
,, 29	Cape Town—Sleepers	Railway Department	Railway Stores, Cape Town, Port Elizabeth.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
July 15	Newark-upon-Trent—Grammar School, &c.	£25, £15, £10.	——	G. Tallents, Clerk to Governors, Magnus Grammar School, Newark-upon-Trent.
,, 20	Taunton—Library	£30, £20, £10.	10s. 6d.	G. H. Kite, Town Clerk, Municipal Buildings, Taunton.
Sept. 12	Stonehaven, Scotland—Alterations and Additions to Town Hall.	——	——	G. Murdoch, Borough Surveyor, Stonehaven.
1904. Mar. 31	Vienna—Machinery to Lift Boats on Canal	100,000, 75,000 and 50,000 kronen.	——	Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C.

The Editors of The Builders' Journal, in response to many repeated requests by students and others, have compiled the following list of the most suitable books published on the various subjects which appertain to architecture and the building trades. Special arrangements have been made to enable readers to be supplied with books at the published prices, *post free.* An endeavour will be made to obtain for regular readers and subscribers any other Technical Books not in this or succeeding lists, and these will also be forwarded to them post free. The names given in brackets are those of the authors or editors of the respective books.

The Builders' Journal List of Technical Books.

Remittances for the amounts stated below should be sent by postal orders, addressed to The Publisher, Technical Journals, Ltd., 6, Great New Street, London, E.C.

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Art of Practical Brickcutting and Setting (Adam Hammond)	1	6
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CARPENTRY, TIMBER, &c.

(*See also* "Shoring" and "Stair Building").

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Tredgold's Elementary Principles of Carpentry (Compiled from Tredgold by E. W. Tarn)	9	6
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Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

DURING THE WEEK ending July 4th fourteen failures in the building and timber trades in England and Wales were gazetted.

W. B. JOSLIN, builder, Hull. R.O. and adj. June 26th.

J. MOLYNEUX, builder, St. Helens. R.O. June 22nd.

W. FRANKS, builder, Wednesbury. R.O. June 25th.

W. J. HADFIELD, joiner, Putney. R.O. June 25th.

W. MOSES, builder and contractor, Sennybridge. R.O. and adj. June 26th.

A. E. KEYS, builder, Streatham. R.O. and adj. June 27th.

FRENCH BROTHERS, builders, Wimbledon Park. R.O. June 23rd.

S. Y. BROCK & SON, builders and contractors, Alburgh, Norfolk. Adj. June 23rd.

A. T. KEY, carpenter and joiner, Nottingham. R.O. and adj. June 24th.

R. D. DANIEL, tar pavior and contractor, East Acton. Adj. June 20th.

J. A. HOWARTH, joiner and builder, Littleborough. R.O. and adj. June 24th.

E. J. CHARLES, builder and contractor, Moseley. P.E. adjourned to July 20th at Birmingham County Court.

A. J. RIDDELL, architect, Kenmure, Karluke. Liabilities £558; assets £300.

C. WILLIAMS, builder and contractor, Swindon. P.E. adjourned to July 29th, at 11.3 , at Swindon Bankruptcy Court.

WALTER !G. BROWN, contractor, Leicester. R.O. June 23rd. First meeting, O.R.'s, Leicester, July 8th, at 12. P.E., The Castle, Leicester, July 17th, at 10.

L. MURRELL, builder, Bexhill. First meeting, Hastings C.C., July 14, at 11. P.E., Hastings Town Hall, July 14th, at 12. Adj. June 23rd.

S. SMITH, plumber, painter, glazier and decorator, Lower Gornal. First meeting, O.R.'s, Dudley, July 8th, at 10.30. P.E., Dudley C.C., July 9th, at 11.

T. OSBORNE, builder, Stoke Newington. First meeting, O.R.'s, 14, Bedford Row, W.C., July 10th, at 12. P.E., Edmonton C.C., July 27th, at 11.15.

W. GIBSON, builder and contractor, Exeter. R.O. June 26th. First meeting, O.R.'s, Exeter, July 8th, at 10.30. P.E., Exeter Castle, July 16th, at 2.30.

J. CLARK, builder, Manor Park. R.O. June 23rd. First meeting, Bankruptcy Court, London, July 10th, at 12. P.E., same, August 5th, at 11.30.

A. W. SOUTHON, plumber, Edenbridge. First meeting, 24, Railway Approach, London Bridge, S.E., July 9th, at 12.30. P.E., Tunbridge Wells Town Hall, July 15th, at at 2.30.

C. HENDERSON, monumental mason, Rochdale. First meeting, Rochdale Town Hall, July 14th, at 11.15. P.E., Rochdale Lecture Hall, July 17th, at 11.30. Adj. June 23rd.

W. KILNER, painter and house decorator, Swansea. R.O. and adj. June 22nd. First meeting, O.R.'s, Swansea, July 10th, at 12.30. P.E., Swansea Town Hall, July 17th, at 11.30.

J. VERNON, builder and contractor, Eaton, Tarporley. Liabilities £32; assets estimated at £8; deficiency £289. Commenced business as joiner in 1896 with a borrowed capital of £6).

W. SINGLETON, builder's manager, Hampton. Liabilities £1,194, of which £305 are expected to rank for dividend. Assets £581, chief item of which is £355 surplus from certain securities in hands of fully secured creditors, and £200 interest under father's will.

W. G. BROWN, contractor, Leicester. Gross liabilities £10,295; unsecured liabilities £4,927; assets £3,420; deficiency £1,507. Fully secured creditors £2,372, partly secured £4,126, of which £1,217 is expected to rank for dividend.

The following companies are to be wound up:—

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ELECTRIC TRAMWAYS CONSTRUCTION AND MAINTENANCE CO., LTD.

HYGIENIC STOVE CO., LTD. W. H. Armitage, Station Street Buildings, Huddersfield, liquidator.

JARRAH WOOD & SAW MILLS CO., LTD. F. F. Fuller, 7 to 11, Moorgate Street, E.C., liquidator.

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LEEDS BUILDERS, LTD. T. Coombs, 14, King Street, Leeds, liquidator.

CARNARVONSHIRE GRANITE QUARRIES, LTD. R. G. Davidson, 4, Tokenhouse Buildings, E.C., liquidator.

GUIDEBRIDGE BRICK AND TILE CO., LTD. A. Gibson, Dukinfield Lodge, Dukinfield, Chester, liquidator.

Current Market Prices.

FORAGE.

		£	s.	d.	£	s.	d
Beans	per qr.	1	9	6	1	11	9
Clover, best	per load	4	7	6	4	15	0
Hay, best	do.	3	15	0	4	10	0
Sainfoin mixture ..	do.	3	15	0	4	5	0
Straw	do.	1	8	0	2	0	0

OILS AND PAINTS.

		£	s.	d.	£	s.	d.
Castor Oil, French ..	per cwt.	1	1	10	1	2	2
Colza Oil, English ..	do.	1	4	0		—	
Copperas	per ton	2	2	6		—	
Lard Oil	per cwt.	2	15	0	2	17	0
Lead, white, ground, carbonate	do.	1	4	10	—		
Do. red	do.	1	0	$4\frac{1}{2}$			
Linseed Oil, barrels ..	do.	1	1	3		—	
Petroleum, American ..	per gal.	0	0	$5\frac{7}{8}$	0	0	6
Do. Russian ..	do.	0	0	$4\frac{3}{8}$	0	0	$4\frac{1}{2}$
Pitch	per barrel	0	7	6		—	
Shellac, orange	per cwt.	6	12	0		—	
Soda, crystals	per ton	3	2	6	3	5	0
Tallow, Town	per cwt.	1	16	9	1	7	0
Tar, Stockholm	per barrel	1	1	6		—	
Turpentine	per cwt.	1	18	$3\frac{1}{2}$		—	

METALS.

		£	s.	d.	£	s.	d.
Copper, sheet, strong ..	per ton	71	0	0		—	
Iron, Staffs., bar	do.	6	5	0	8	10	0
Do. Galvanised Corrugated sheet ..	do.	11	5	0	11	10	0
Lead, pig, Soft Foreign ..	do.	11	13	9	11	15	0
Do. do. English common brands . ..	do.	12	0	0		—	
Do. sheet, English 3lb. per sq. ft and upwards ..	do.	14	10	0		—	
Do. pipe	do.	15	0	0		—	
Nails, cut clasp, 3in. to 6in.	do.	9	5	0		—	
Do. floor brads ..	do.	9	0	0		—	
Steel, Staffs., Girders and Angles	do.	5	12	6	6	7	6
Do. do. Mild bars ..	do.	6	10	0	7	2	6
Tin, Foreign	do.	126	10	0	127	0	0
Do. English ingots ..	do.	128	10	0	129	0	0
Zinc, sheets, Silesian ..	per ton	26	0	0		—	
Do. do. Vieille Montaigne	do.	26	5	0		—	
Do. Spelter	do.	20	7	6	20	12	6

TIMBER.

SOFT WOODS.

		£	s.	d.	£	s.	d.
Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow ..	do.	5	5	0	6	5	0
Do. Pitch	do.	2	12	0	3	3	0
Laths, log, Dantzic ..	per fath.	4	10	0	5	10	0
Do. Petersburg ..	do.	7	5	0		—	
Deals, Kovda, 3rd Yell. 3×9	per load	13	15	0		—	
Do. Petersburg, 1st White 3×11	do.	13	5	0		—	
Do. Oserka, inferior, 5th Yellow 3×9	do.	7	0	0		—	
Do. Riga, White .. 3×10	do.	6	17	6		—	
Do. Asbacka, inferior 5th Yellow 3×9	do.	7	10	0		—	
Do. Söderhamn, Yell., 3rd 4×9	do.	16	10	0		—	
Do. do. do. do. $2\frac{1}{2}$×7	do.	11	10	0		—	
Do. do. do. 5th, 3×9	do.	9	15	0		—	
Do. do. do. mixed, $2\frac{1}{2}$×7	do.	13	10	0		—	
Do. Ljusne, Yellow, 3rd, 3×8	do.	12	5	0		—	
Do. Archangel, Yell. 4th, 4×11	do.	10	10	0		—	
Do. Sörnäs, Unsorted Yellow, 3×11	do.	9	10	0		—	
Do. do. do. 3×7	do.	8	10	0		—	
Do. Quebec, White Spruce, 3rd, 3×9	do.	9	15	0		—	
Do. Montreal, Bright Yell. Pine, 3×11×16ft.	do.	9	15	0		—	
Do. St. Johns, 1st, 2nd and 3rd unsorted bright Spruce, 3×11	do.	8	0	0		—	
Do. do. do. do 3×9	do.	8	0	0		—	
Do. do. 1st, 2nd and 3rd White Spruce, 3×7	do.	7	10	0		—	
Battens, all kinds ..	do.	6	10	0	12	0	0
Flooring Boards 1in. prepared, 1st	per square	0	10	0	0	12	6
Do. 2nd	do.	0	9	9	0	10	6
Do. 3rd &c.	do.	0	9	9	0	9	9

HARD WOODS.

		£	s.	d.	£	s.	d.
Ash, Quebec	per load	3	12	6		—	
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	15	0	0	20	0	0
Cedar, Cuba	per ft. sup.	0	0	$5\frac{1}{4}$		—	
Do. Honduras ..	do.	0	0	$5\frac{31}{32}$		—	
Do. Tobasco	do.	0	0	$4\frac{31}{32}$		—	
Elm Quebec	per load	4	0	0		—	
Mahogany, Average Price for Cargo, Honduras ..	per ft. sup.	0	0	$6\frac{1}{32}$		—	
Do. African ..	do.	0	0	$4\frac{11}{32}$		—	
Do. St. Domingo	do.	0	0	$3\frac{29}{32}$		—	
Do. Cuba ..	do.	0	0	$5\frac{5}{16}$	0	0	$5\frac{7}{8}$
Do. Gaboon ..	do.	0	0	$3\frac{15}{32}$		—	
Do. Tobasco ..	do.	0	0	$6\frac{11}{32}$	0	0	$8\frac{1}{4}$
Oak, Dantzic and Memel	per load	3	5	0	3	15	0
Do. Quebec	do.	6	5	0	6	10	0
Teak, Rangoon, planks ..	do.	16	0	0	17	10	0

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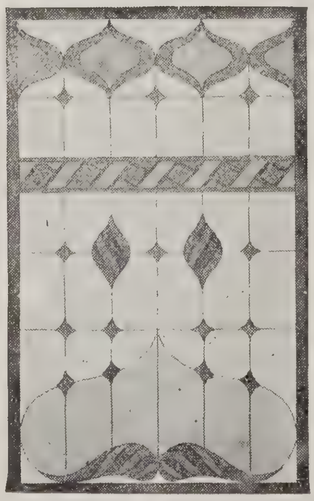

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ARCHITECT'S AND SURVEYOR'S MANAGING ASSISTANT desires Engagement in large city. Young and energetic; capable business man and Quantity Surveyor. High class provincial experience. References.—ABIR, Box 2485, BUILDERS' JOURNAL Office, 9, East Harding Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT (22), requires SITUATION, 6 years' North and South experience. Quantities, competition and working drawings, details, specifications, levelling, surveying, &c. Salary, 25/-. Specimens.—Box 2505, BUILDERS' JOURNAL Office, 9, East Harding Street, Fetter Lane. E.C.

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BUILDERS' CLERK (31). Prime cost, accounts, estimates, and general routine. Good references.—PITKIN, 1, Claybrook Cottages, East End, Finchley, N.

CARPENTER and JOINER wants job as Caretaker on estate, or do repairs hotel or flats; married; no children; abstainer; good references.—D., 23A, James Street, Oxford Street, W.

CLERK OF WORKS requires situation. Experienced in all branches. Town or country; home or abroad. Exceptional references.—Box 2498, BUILDERS' JOURNAL Office, 9, East Harding Street, Fetter Lane, E.C.

EXPERIENCED CLERK — Bookkeeper, 27 (residing Liverpool), desires permanent part-weekly engagement, where his Drawing, Tracing, &c. abilities, would be of service.—Box 2502, BUILDERS' JOURNAL Office, 9, East Harding Street, Fetter Lane, E.C.

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BUILDER'S YARDMAN WANTED. One who thoroughly understands plant, booking materials in and out, and assisting in loading and unloading vans, &c.—Apply to FOREMAN, Union Works, Church Street, Deptford.

CLERK OF WORKS required at once who can prepare working plans and specifications of plain workshop sheds. Conform to County Council regulations. State wages, experience, &c., to Box 2510, BUILDERS' JOURNAL Office, 9, East Harding Street, E.C.

CLERK of WORKS WANTED at once, to Superintend the Erection of New County Hall, &c., at Northallerton. Only men of experience as Clerk of Works need apply.—Applications, in own handwriting, stating salary required and enclosing copies of recent testimonials, and giving references, age, qualifications, and past and present appointments, to be sent to W. H. BRIERLEY, Architect, 13, Lendal, Yorks.

CONTRACTOR'S FOREMAN WANTED. One used to Estate, Drainage, Sewer, and Ground Work.—Apply by letter, T. S., 45, South Molton Street, W.

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Miscellaneous.

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BRICKWORK and POINTING Wanted by Rod or Lump. Town or country. Good references.—E. H., 11, Charles Street, Barnes, S.W.

GRAINER AND WRITER to the Trade.—J. FRAIL, 38, Coopersale Road, Homerton, N.E.

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PLASTERING wanted by practical reliable man. Town or country. Any quantity.—Address, G. B., 78, Fullerton Road, Wandsworth, S.W.

QUANTITY SURVEYOR of wide and varied experience is prepared to arrange with Architects for the preparation of Bills of Quantities on mutual terms. Time and accuracy guaranteed.—Box 2340, BUILDERS' JOURNAL Office, 9, East Harding Street, Fetter Lane, E.C.

R.I.B.A., Society of Architects, and Civil Service Technical Examinations. Preparations by correspondence. Twenty-two first places.—G. A. T. MIDDLETON, 19, Craven Street, W.C.

R.I.B.A. EXAMS.—Personal and Correspondence tuition; courses of any duration. Apply for syllabus to Mr. A. G. BOND, B.A.Oxon., A.R.I.B.A., 115, Gower Street, London, W.C. (late Howgate and Bond).

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TO ARCHITECTS, BUILDERS, AND OTHERS.—Plans prepared at lowest charges; Tracings from 5s. Specifications, &c., accurately typewritten, 1s. per 1,000 words.—D. R. MATHISON, 39A, Algernon Road, Hendon.

Miscellaneous Articles for Sale.

LIFTS.—WM. AUG.'S GIBSON, LTD., formerly President of American Elevator Co., later Managing Director Otis Elevator Co., Ltd. Temple Bar House, 28, Fleet Street, London, E.C.

TO BUILDERS.—Write us for particulars of WOOD-BLOCK FLOORING. Builders' own Wood Blocks laid in our Special Composition. Repairs.—LUDLOW & BOURKE, No. 84, Shernhall Street, Walthamstow.

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NOTE.—Advertisements for this page must reach the Office not later than 5 o'clock p.m. on Monday.

Trade and Craft.

A New Machine for Shaping Bricks.

Mr. William Caplen, of 29, Tamworth Road, West Croydon, announces that having made arrangements with an eminent firm of engineers to manufacture his patent machine for shaping bricks for gauge or moulded brickwork, he is now in a position to execute orders for the same. The machine has been tested by a large number of persons engaged in the building trade, and has proved to be a great time- and labour-saving invention, besides being a considerable improvement on the old method of moulding or shaping bricks. By its use gauged or moulded brickwork can be formed into any predetermined and desired shape with absolute precision, and four time quicker than by the old method. The machine has nothing unnecessary about it, and is not liable to get out of repair. It effects a considerable saving of material and dispenses with the various implements formally used for the same purpose, such as the bevel, templet, square, bowsaw, specially-prepared moulds, and other similar tools. The bench of the machine can be used for any ordinary sawing purposes. This machine turns out extremely clean work with remarkable rapidity, as a rule far better than the old hand methods of working.

Artistic Mantels.

Messrs. Barnard, Bishop & Barnards, Ltd., of Norwich (London showrooms at 23, Princes Street, Cavendish Square, W.), have issued a new catalogue containing a few selected designs of their artistic grates and mantels. These include the "Norvic," the "Saxon," the "York," the "Lancaster," the "Howard," the "Warwick," and a new mantel register in iron, No. 901. The "Norvic" is a tasteful design consisting of a hand-carved oak mantel with an overmantel having a square mirror in the centre and fluted pilasters running down at either side of the grate, the latter being carried out in briquette tiles with bull-nosed edges next the fire, slabbed up in one solid piece on the firm's lock-fast principle. When made up, the fire lasts eight or ten hours without attention, and if desired the pan can be removed to allow a genuine log, peat or coal fire to burn on the hearth without the smoke coming into the room or the heat being wasted up the chimney. The cost of the grate is about £6 10s., or £22 with the oak mantel and overmantel. The "Saxon" is made up entirely of tiles with solid glazed hobs, in one piece ready for fixing. The arrangement of the fire basket is good, but the design itself is not so commendable, the centre panel and bulges over the columns being undesirable. The "York" and "Lancaster" are excellent designs, perfectly simple in treatment. They each consist of a mantel register made up entirely of tiles, bull-nosed at the edges, with a shelf which can be made in pine for painting or in oak fumigated, mahogany or walnut dull-polished. The head of the fire opening is square in the "Lancaster," which is rather more effective than the cambered head of the "York." These mantels range in price from £5 15s. to £7 10s. The "Howard" is a similar grate to the "Norvic" but with a cambered head instead of a tiled hood, and with a different mantel and overmantel. The "Warwick" is a quaint design. It has a hand-repoussé canopy over the grate, the latter being fitted on an iron base with asbestos packing, Teale fire-basket, ashpan with ventilating front and register door. The overmantel has a cupboard at each side. Altogether the designs are to be recommended, and architects will doubtless be glad to adopt them in place of the mid-Victorian monstrosities in cast-iron which even now find a considerable market.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

Ayr.—For the work to be done in laying sewers and constructing sewage purification works in the special drainage district of Craigbank, New Cumnock, for the Ayr District Committee. Mr. W. R. Copland, C.E., engineer, 146. West Regent Street, Glasgow:—

Milne & Murray, Coatbridge	£3,350	10	5
R. Scott, Dreghorn	3,102	10	1
J. Osborne, Ayr	3,069	1	3
D. Watson, Glasgow	3,006	9	10
W. G. Flett, Lenzie	2,838	19	3
A. Stark & Son, Glasgow	2,571	1	1
T. Crawford & Sons, Ayr	2,450	3	7
Kirkwood, Kerr & Co, Ayr	2,446	1	0
R. C. Brebner & Co., Edinburgh	2,237	10	6
A. Beattie, New Cumnock	2,100	17	9
R. Crawford-Castle,* New Cumnock	1,996	17	0

* Accepted.

Axbridge.—For the Cheddar waterworks (Contract No. 3) pipelaying, for the Axbridge Rural District Council. Mr. A. Powell, A.M.I.C.E., engineer, 3, Unity Street, College Green, Bristol:—

E. Monks, Fishponds	£14,085	7	9
Rowell & Son, Chipping Norton	5,070	16	10
Page, Cardiff	4,059	12	3
Davies, Ball & Co., London	3,833	15	0
Lloyd & Son, Weston-super-Mare	3,652	17	6
W. L. Meredith & Co., Ltd., Gloucester	3,115	0	0
H. Sharlow, Nottingham	2,768	0	0
Peerless, Dennis & Co., Eastbourne	2,657	0	0
G. Simmons, Shipham	2,500	0	0
J. Riley,* Cheltenham	2,449	14	6

* Accepted.

Chester.—For the construction of sewers in the townships of Christleton and Great Boughton, in the city of Chester, in the county of Chester, for the Chester Rural District Council:—

G. Read & Son, Burnley	£13,288	10
H. Buckley, Bingley	12,633	0
Underwood Brothers, Dukinfield	12,615	0
G. Freeman & Sons,* Hollinwood, Oldham	11,727	0

* Accepted.

Hereford.—For the erection of an isolation hospital, administrative block, and other works at Stretton Sugwas, for the Hereford Rural District Council. Mr. Ernest G. Davies, M.S.A., architect, Bridge Street, Hereford:—

Davies & Co.	£2,220	H. P. Lewis	£2,050
H. R. Beavis, Stroud	2,200	E. W. Wilkes	1,875
W. Powell	2,067	C. Cooke*	1,875
J. Davies	2,062		

* Accepted. [Rest of Hereford.]

London, S.E.—For rebuilding the premises, 108 and 110, Prince Street, Deptford, for the Lift and Hoist Co. Mr. John James Downes, architect, 199, Lewisham High Road, S.E.:—

Fireproof floors.

W Falkner	£1,643	1	3
T. D. Leng	1,625	0	0
Hall Brothers	1,525	0	0
W. O. Collingwood*	1,400	0	0
S. R. Best†	1,145	10	0

Wooden floors—fireproof flat.

W. Falkner	£2,053	0
T. D. Leng	1,604	0
Hall Brothers	1,525	0
W. O. Collingwood*	1,500	0
S. R. Best†	1,311	5

* Accepted. † Withdrawn.

London, S.E.—For iron fire-escape staircases and building works connected therewith at Renfrew Road Workhouse, for the Lambeth Board of Guardians:—

W. A. Baker & Co., E.C.	£2,525	0	0
B. E. Nightingale, S.E.	2,439	0	0
Hayward Brothers & Eckstein, S.E.	2,360	0	0
Jukes, Coulson, Stokes & Co., E.C.	2,160	0	0
Herring & Son, Chertsey	2,000	0	0
Bostwick Co., E.C.	1,967	0	0
T. Pearce, Thornton Heath	1,950	0	0
Hart, Son & Peard, W.C.	1,925	0	0
H. & G. Measures, Croydon	1,907	10	0
R. Carr & Co., E.	1,797	3	6
T. Potter & Sons, W.	1,789	0	0
St. Pancras Ironworks Co., N.W.	1,765	0	0
J. Stone, Southwark	1,707	10	0
E. Wall,* 2, Alice Terrace, Barratt Lane, S.W.	1,380	0	0
J. Hall, Oldham	—		
Powers, Deane & Ransome,† Plymouth	—		

* Accepted. † Withdrawn.

Mortlake.—For the erection of 26 workmen's dwellings, South Worple Way, Mortlake, for the Barnes Urban District Council. Mr. G. Bruce Tomes, A.M.I.C.E., surveyor, Mortlake:—

G. E. Sturgis, S.W.	£8,953	5	11
Cropley Brothers, Epsom	8,276	0	0
C. Feltham, S.W.	7,643	4	7
Foster Brothers, S.E.	7,492	0	0
Dakin & Co., Putney Hill	7,265	0	0
T. Bendon, Hammersmith	7,183	0	0
B. E. Nightingale, E.C.	7,126	0	0
Haynes & Co., West Ham	6,970	0	0
W. S. Beaton, Pimlico	6,837	0	0
W. H. Gaze, Kingston-upon-Thames	6,749	0	0
R. & E. Evans, Peckham	6,589	0	0
W. J. Renshaw, Putney	6,477	0	0
Jones Brothers, Tooting	6,304	4	6
A. Hunt & Sons, Barnes	6,143	18	0
E. Seaber, Firdale, East Sheen	5,966	0	0
J. Barker & Co., W.	5,900	0	0
Antill & Squires,* Fernlea, Fallsbrook Road, Streatham	5,713	0	0

* Accepted. [Surveyor's estimate, £5,950.]

Newport (Mon).—For the rebuilding of the Waterloo Hotel at the corner of Alexandra Road and Watch House Parade, Newport, for Mr. John Williams. Mr. R. J. Pottinger Hodge, architect, Prudential Buildings, Newport:—

Smith Brothers	£7,655	0
E. C. Jordan	7,640	0
Leadbeter Brothers	7,330	0
W. A. Linton	7,305	0
A. S. Morgan & Co.	7,157	0
C. H. Reed	7,046	0
C. Locke	6,827	10
W. Moore,* Daniel Street	6,438	0

* Accepted.

Oxford.—For the erection of a cricket pavilion for Merton College, Oxford, Mr. Herbert Quinten, architect and surveyor, 22, George Street, Oxford:—

J. Peattie	£1,328
J. Parnell & Son	1,070
McC. E. Fitt	897
Brucker Brothers	885
J. Wooldridge	854
Symen & Co.*	777

* Accepted.

Preston.—For the erection of offices at steam mill, Fylde Road, Preston, for Messrs. John Eccles & Co. Quantities supplied by the architect, Mr. W. Mumford, architect, 12, Guildhall Street, Preston:—

C. Walker	£1,177	0	0
W. Whiteside	1,138	4	10
W. Almond	1,078	10	0
D. Tullis & Son	1,065	0	0
T. N. Livesey	1,030	0	0
M. Shorrock	1,011	0	0
J. Cartmel & Son	1,005	0	0
T. Croft & Sons, Ltd.	1,001	0	0
W. J. Joy	1,000	0	0
R Dewhurst*	1,000	0	0

* Accepted.

St. Albans.—For the extension of the workhouse infirmary, for the Guardians. Mr. H. E. Hansell, architect:—

Vale & Williamson	£3,677	0
C. W. Dumpleton	3,676	0
E. Dunham	3,640	0
F. W. Stanley	3,594	0
Miskin & Son,* St. Albans	3,517	0
J. T. Bushell	3,499	10

[Architect's estimate, £3,350.]

* Accepted.

Shoeburyness.—For additions to the Board School, Hingnar Street, for the Shoeburyness School Board. Messrs. Burles & Harris, architects, Southend:—

F. E. Woodhams	£5,846	E. West	£5,384
Dupont & Co.	5,550	Davey, Ltd.	5,297
T. Whur	5,508	S. E. Moss	5,130
Davis & Leany	5,433	W. E. Davey	4,960
A. J. Harris	5,393		

Soundwell (near Bristol).—For the erection of the first portion of the St. Stephen's Church, Soundwell near Bristol, for the Church Building Committee. Mr. H. M. Bennett architect, 56, Corn Street, Bristol:—

A. H. Forse & Sons, Bristol	£3,314	0	0
Adams & Jefferies	3,025	0	0
Stephens & Bastow, Bristol	2,856	0	0
J. Hatherley, Brislington	2,527	0	0
E. Love, Redland	2,371	0	0
E. Walters & Son, Montpelier	2,297	0	0
R. H. Brown,* Downend, near Bristol	2,161	17	9

* Accepted.

Stowmarket (Suffolk).—For alterations and additions to the union house and laundry and drainage scheme, for the Guardians of Stow Union. Mr. John S. Corder, architect, Wimborne House, Tower Street, Ipswich:—

W. G. Porter, Cromer	£5,716	0	9
Scales & Robins, Cambridge	4,850	9	0
Murray & Sherwin, Stowmarket	4,453	0	0
A. Plummer, Bury St. Edmunds	4,451	0	0
H. Potter, Chelmsford	4,305	0	0
W. Theobald & Sons,* Needham Market	4,128	0	0

* Accepted.

Swansea.—For very large additions, alterations, and improvements to the Brynhyfryd Board School, for the Swansea School Board:—

T. Richards	£14,900
H. Billings	14,150
Lloyd Brothers	13,890
Walters & Johns, Morriston	13,560
E. Morgan, Landor	13,392
J. & F. Weaver, Manselton	12,905
Jones, Price, Rees & Davies	12,953
G. Davies,* Heathfield	11,499

* Accepted. [Rest of Swansea.]

Walthamstow.—For the ereotion and completion of the Prospect Hill Presbyterian Church, for the Building Committee. Mr. J. Williams Dunford, architect, 100c, Victoria Street, E.C.:—

Snewin Brothers & Co.	£5,949	J. Reed	£5,279
F. J. Coxhead	5,678	Sands, Palmer & Co., Walthamstow	5,042
Shurmur & Sons	5,490		

[Architect's estimate £5,000.]

West Hartlepool.—For additions to St. Joseph's Convent, Grange Road. Mr. James Garry, architect, 47, Church Street, West Hartlepool. Quantities by Mr. George Bell, Newcastle:—

Dickinson & Son	£4,092	0	0
J. G. Brown	3,750	16	0
Hardy & Co.	3,687	10	0
Watt Brothers	8,618	11	4
R. Mothersdale,* West Hartlepool	3,400	0	0
E. Watt	3,397	0	0

* Accepted.

(*Continued on page* xviii.)

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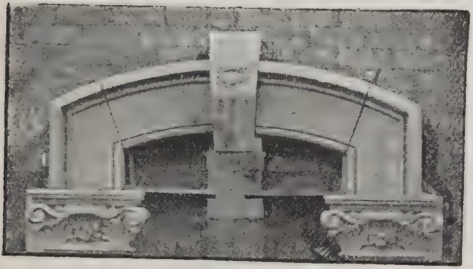

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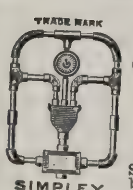

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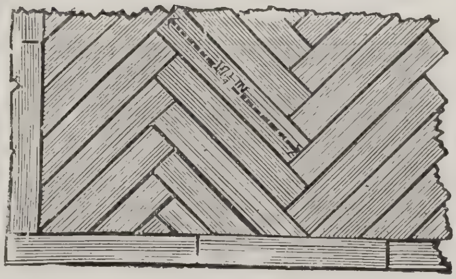

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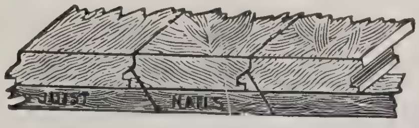

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TENDERS—*cont.*

Watford.—For the erection of a household management centre at the Alexandra School, for the Watford School Board. Mr. W. H. Syme, architect, 4, High Street, Watford:—

W. Sampson	£2,213	0
Goodchild & Jeffery, Radlet	2,150	0
Clark Brothers	2,124	10
F. Dupont & Co.	2,095	0
G. Wiggs	2,076	0
R. L. Tonge	2,065	0
Townsend & Coles, London	2,004	0
W. King	2,000	0
Tyler & White	1,975	0
G. & J. Waterman	1,956	0
C. Brightman	1,920	0
H. Brown,* Whippendale Road	1,897	0

* Accepted. [Rest of Watford.]

West Ham.—For the construction of corrugated iron tramcar sheds, West Ham Lane, West Ham, for the West Ham Town Council. Mr. John G. Morley, borough engineer:—

J. McManus	£1,878	0	0
Humphreys, Ltd.	1,821	0	0
Hadley & Son	1,768	12	10
Hawkins & Co.	1,710	0	0
Powers & Deane, Ransomes, Ltd.	1,654	15	0
Pierson & Co.	1,569	0	0
W. Harbrow	1,510	0	0
Westwood & Co., Ltd.	1,495	0	0
Smith & Co.	1,480	0	0
Baker & Co.	1,450	0	0
F. Morton & Co.	1,450	0	0
E. C. Keay, Ltd.	1,437	0	0
Whitford & Co.	1,423	0	0
Boulton & Paul	1,412	0	0
Jones & Son, Ltd.	1,390	10	0
Works Manager	1,363	0	0
Clyde Structural Iron Co.	1,346	0	0
J. Ellis	1,330	10	6
Grays Steel Construction Co.	1,325	0	0
Cross & Cross	1,286	0	0
Jukes, Coulson, Stokes & Co.	1,250	0	0
Bryden & Middleton	1,200	0	0
Croggon & Co.	1,150	0	0
Steavenson & Co.	1,115	0	0
Walker Brothers, Ltd.*	1 099	0	0
W. G. O'Grain		—	
Stevens, Smith & Co., Ltd.		—	

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New Companies.

REGENT HOUSE PROPERTY AND INVESTMENT CO., LTD., land, estate and house owners, builders, contractors, &c., 104, Globe Road, Mile End, E. Capital: £6,000 in £30 shares.

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JOHN E. KITTON, LTD, builders' merchants, timber merchants, &c., Station Works and Sawmills, Wakering Road, Barking, Essex. Capital: £2 500 in £1 shares.

UNIVERSAL INSULATOR, LTD, manufacturers and dealers in electric insulators and moulded articles, electrical engineers, &c. Capital: £10,000 in £1 shares.

MOUNTFORD, PHILLIPS & CO., LTD., hardware merchants, dealers in welded and weldless scaffold, block, cable, crane, sash and other chains, &c., The Thorns, Quarry Bank, Staffordshire. Capital: £6.000 in £1 shares.

NORMAN PORTLAND CEMENT CO, LTD., manufacturers of Portland cement, artificial stone, lime, bricks, tiles, pipes, &c., Coldharbour Lane, Cherryhinton, Cambridge. Capital: £85,000 in £1 shares.

Coming Events.

Wednesday, July 8.

SANITARY INSTITUTE.—Annual Congress and Health Exhibition at Bradford. Second Day. Conferences of Municipal Representatives, of Medical Officers of Health, of Engineers and Surveyors to County and other authorities, of Veterinary Inspectors, of Sanitary Inspectors, of Ladies on Hygiene, on Industrial Hygiene, and on the Hygiene of School Life, from 9 30 a.m to 2 p.m., in the Town Hall, Technical College, Mechanics' Institute, Church Institute, and School Board Offices. Conversazione and Reception in St. George's Hall by the Mayor at 7.30 p.m.

SOUTHERN COUNTIES MASTER BUILDERS' FEDERATION.—Council Meeting at 3.30 p.m.

INSTITUTE OF SANITARY ENGINEERS, LTD.—Meetings of General Purposes and Finance Committee at 4 15 p.m., and Election Committee at 5.15 p.m.

Thursday, July 9.

SANITARY INSTITUTE.—Annual Congress and Health Exhibition at Bradford. Third Day. Meetings of Section I., Sanitary Science and Preventive Medicine; Section II., Engineering and Architecture; and Section III., Physics, Chemistry and Biology, in the Church Institute and the Technical College from 10 a.m. to 2 p.m. Lecture in the Public Hall, Technical College, by John Slater, B.A., F.R.I.B.A., at 8.30 p.m.

Friday, July 10.

SANITARY INSTITUTE.—Annual Congress and Health Exhibition at Bradford Fourth Day. Meetings of Sections I., II. and III. from 10 a.m. to 2 p.m. Closing Meeting of Congress in Church Institute at 1.30 p.m. Popular Lecture in Mechanics' Institute, by Major Ronald Ross, at 8.30 p.m.

Tuesday, July 14.

INSTITUTE OF SANITARY ENGINEERS, LTD.—Provincial Summer Meeting at Wolverhampton (three days).

Wednesday, July 15.

ROYAL INSTITUTE OF PUBLIC HEALTH.—Congress at University College, Liverpool (six days).

The Hellenic Society held its annual meeting last week in the rooms of the Society of Antiquaries. The report of the council stated that a further grant of £100 had been made to the Cretan Exploration Fund, that the annual grant of £100 to the British School at Athens had been renewed for a further period of three years, and that the Society made a small grant to the British School at Rome; a grant of £25 had also been made to Mr. D. G. Hogarth to assist him in exploring Greek sites in the northern portion of the Egyptian delta. Of losses sustained by death during the past year, special mention was due to Mr. F. C. Penrose, the eminent architect, who had served on the council since the foundation of the society, and had for many years held the office of vice-president, and to Mr. Stephen Spring Rice, C.B., one of the auditors of the society. The present total of subscribing members is 816, and of honorary members twenty-five.

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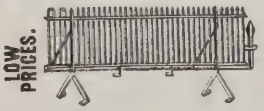

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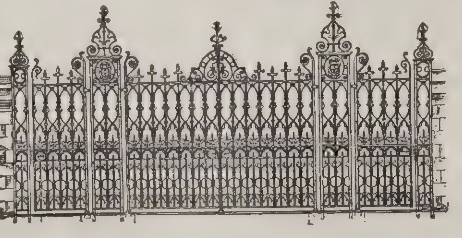

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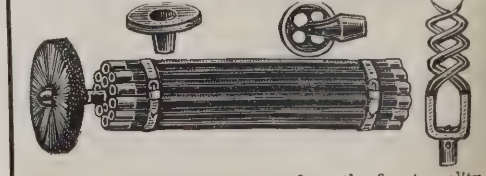
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THE

BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

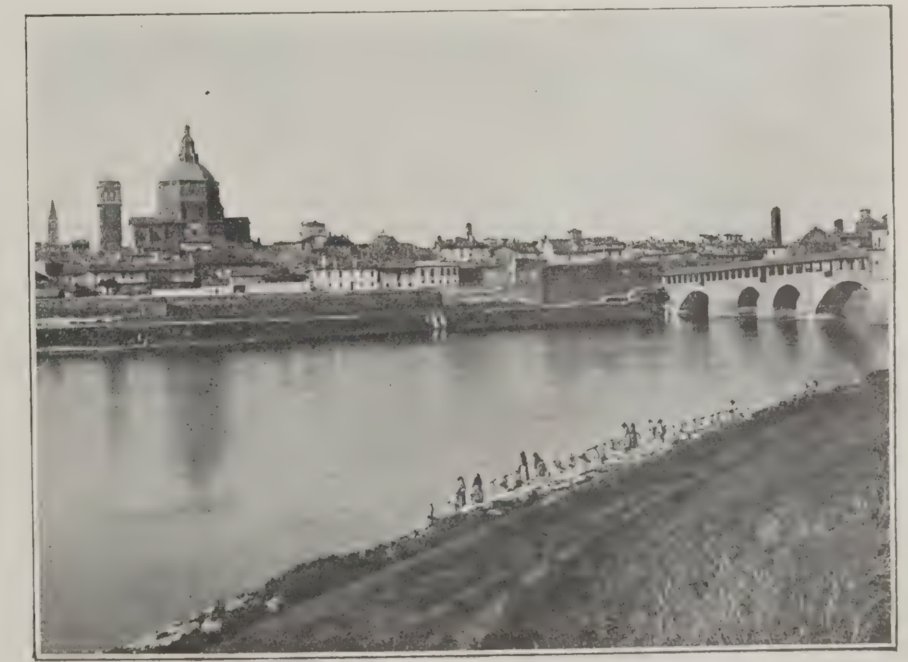
July 15, 1903. Vol. 17, No. 440. 9, East Harding Street, E.C.

The Roof of Pavia Bridge.

The Borgo Ticino, a suburb of Pavia in Northern Italy, is connected with the city by means of a covered bridge over the Ticino river. This bridge, which dates from the year 1354, is 708ft. long, 16ft. wide, and was erected by Duke Galeazzo Visconti II., the design of the bridge being attributed to Giovanni di Ferrara and Jacopo da Gozzo. The bridge, which consists of seven arches, is shown in a cartoon for tapestry representing the battle of Pavia (at which the French king, Francis I., was taken prisoner by the Emperor Charles V.), formerly the property of the Marquis del Vasto, but now in the National Museum at Naples, in which the openings at the sides of the bridge are filled in with brickwork with windows in the same. The roof, which is of wood, is supported by upwards of one hundred granite columns; these greatly contribute to the stability of the bridge, which has successfully resisted for very nearly 550 years the floods to which the river is liable. In the centre of the bridge is a small chapel dedicated to St. Giovanni Nepomucene, the walls of which are covered with votive offerings representing cases of rescue from drowning, which were ascribed to the intervention of the saint. On the pretext that the covered bridge is insanitary, it is proposed to remove the roof in order to admit light and air, but it is satisfactory to note that the proposal has met with opposition from some of the more enlightened inhabitants of the city. It is pointed out that neither the Venetians nor the Florentines have considered it necessary to remove the shops which encumber the Rialto at Venice and the Ponte Vecchio at Florence, and it is to be surmised that the citizens of these places are as fully alive to the necessities of the case as the inhabitants of Pavia. What would be said, it is asked, if the Romans of the Via Palombella, in order to admit light and air to that quarter of the city, proposed to remove the Pantheon, or the people of Lucca determined to destroy their fortifications? The bridge over the Ticino does not appear to have been scheduled as a national monument, an omission which renders it liable to attacks by the municipality of the city, such bodies being usually in Italy, as elsewhere, more ready to destroy than to preserve relics of antiquity. There is a photograph of the bridge in the III-IV part of Memorie e Documenti per la Storia di Pavia, edited by Signor Moiraghi, April, 1895; and there is a measured drawing of it by Signor Giovanni Voghera in *Antichità Pavesi, part ii., 1825;* both of which works are in the library of the British Museum.

Art in Towns.

There has been a noticeable increase in the regard of the public for art in their surroundings during the last few years, and last week a number of circumstances combined to bring this out strongly. Our public bodies are beginning to appreciate the importance of art to the well-being of the community. This question was touched upon by Mr. John Slater, F.R.I.B.A., at the Sanitary Institute Congress, as reported on p. 329 of this issue. Mr. Richardson Evans, hon. secretary of the Society for Checking the Abuses of Public Advertising, in a letter to the "Times," in calling upon the authorities to secure powers to control advertising in public places and to protect the picturesque, mentions by way of example and encouragement that the Prussian Parliament has just passed an Act whereby local authorities are empowered to forbid not only any form of conspicuous announcement that impairs a landscape, but any lettering or placards on private premises, whether they relate to the business conducted there or not. The Massachusetts State Legislature has also passed a similar Act. The London County Council has already taken the lead in prohibiting sky-signs. A meeting was held last week convened by Mr. Mark H. Judge, A.R.I.B.A., to promote the revision recently suggested by Mr. Hamo Thornycroft of the planning of the new Strand as laid out by the London County Council. Sir Henry Lawrence was in the chair, and letters in support were received from Sir Edward J. Poynter, P.R.A.; Mr. T. G. Jackson, R.A.; Mr. Lionel Cust, Director of the National Portrait Gallery; Sir Henry Truman Wood; Sir William Chance, Bart.; the Lord Chief Justice; Major-General Shaw-Stewart, Mr. Halsey Ricardo, Mr. W. Gwyther, F.R.I.B.A., Mr. C. F. A. Voysey, Prof. W. H. Hudson and many others. The Council have postponed the auction sale of building land in Aldwych and the new Strand until October 13th next, and this gives hope the much-needed alteration will be made. The L.C.C. expects the western end of Aldwych to be completed before the new Gaiety Theatre is opened two or three months hence.



THE OLD COVERED BRIDGE AT PAVIA.

THE SHANNON FACTORY.

THE Shannon Factory, which is being erected for the Shannon Co., Ltd., at Dalston, will be a model cabinet-making factory. It is to be opened in the early autumn, and is already practically complete. It has been designed and executed under the personal supervision of Mr. Edwin O. Sachs, who was assisted by his manager, Mr. Lister, and latterly by his partner, Mr. S. Hoffman; Mr. Kissack acting as clerk of works, and the general contractors were Messrs. Howard & Co., of Bow Street, Covent Garden.

It is being equipped under the personal direction of the managing director, Mr. Schafer, in consultation with Mr. Sachs. It embodies everything that is new in the best American and Continental practice, including a full equipment of modern American tools and machines, and much English plant on American models.

The purpose of the factory is the execution of first-class cabinet work and the finer forms of joinery, as well as the general cabinet-making of the roll-top desk and other office utensils with which the name of the Shannon Co., Ltd., has been so successfully associated, but in respect to which architects have certain prejudices on account of the American mouldings, which do not appeal to English taste, and which will now be almost done away with to make room for English work and designs.

The property taken by Messrs. The Shannon, Ltd., for their new factory and warehouse is at Dalston, close to Dalston Lane Station, and is cut in two by a small street called Tyssen Street. The larger half of the site is now the scene of the present building operations, and this site measures 220ft. by 140ft., and is almost rectangular in shape. Light is obtained in the aforesaid Tyssen Street on one side, from Tyssen Passage on the other, and as the land abuts on the Great Northern Railway, light is also obtainable from a third side.

The basis of the plan was the formation of a large central block with two wings projecting, thus forming a semi-enclosed central court. Facing this court, but at the opposite end of the site, were to be placed the boiler-house, dry kilns, and other minor adjuncts of the concern.

The main block has a basement 10ft. high, a ground floor 20ft. high, a first floor 20ft. high, a second floor 10ft. high, and a third top-lighted floor. The west wing and east wing both have the same high ground floor, but the first floor is divided into floors of 10ft. high each, and thus a series of 10ft. floors are provided for.

The different blocks are separated by strong party walls, and the various double iron doors required under the Building Act Further, all the many provisions of the Factory Act have been most carefully acceded to, and in staircase accommodation, exit doors and emergency exits generally, there are few factories that can compare with this structure in the United Kingdom. The central block is particularly remarkable for the fact that it is just within the maximum limits of cubical contents that can be accorded in the County of London, and is hence, perhaps, the largest individual factory block in the Metropolis. The Columbian Fireproof Flooring Company have had the construction of the floors, Wenham & Waters supplied the casements, the Crittall Manufacturing Company the iron doors, and the Patent Impervious Stone Company the stone steps and general stonework. Fire-resisting floors have not only been used throughout, but the big columns, girders, &c., have been protected by 2in. of concrete; and again, besides the constructional preventative measures, the entire blocks are being fitted with a sprinkler system.

Intercommunication between the different floors is by means of lifts, wells, cranes, as well as by the staircases. Conveniences for the staff are on every floor, and the west wing basement is devoted entirely to mess-rooms and dressing-rooms for the employeés.

The actual division of the building into various workshops is not a matter that should be described at the moment, but it might be said that everything has been done to save unnecessary moving of material and to economise in labour. Runaways, trolley lines, &c., have amply been made use of.

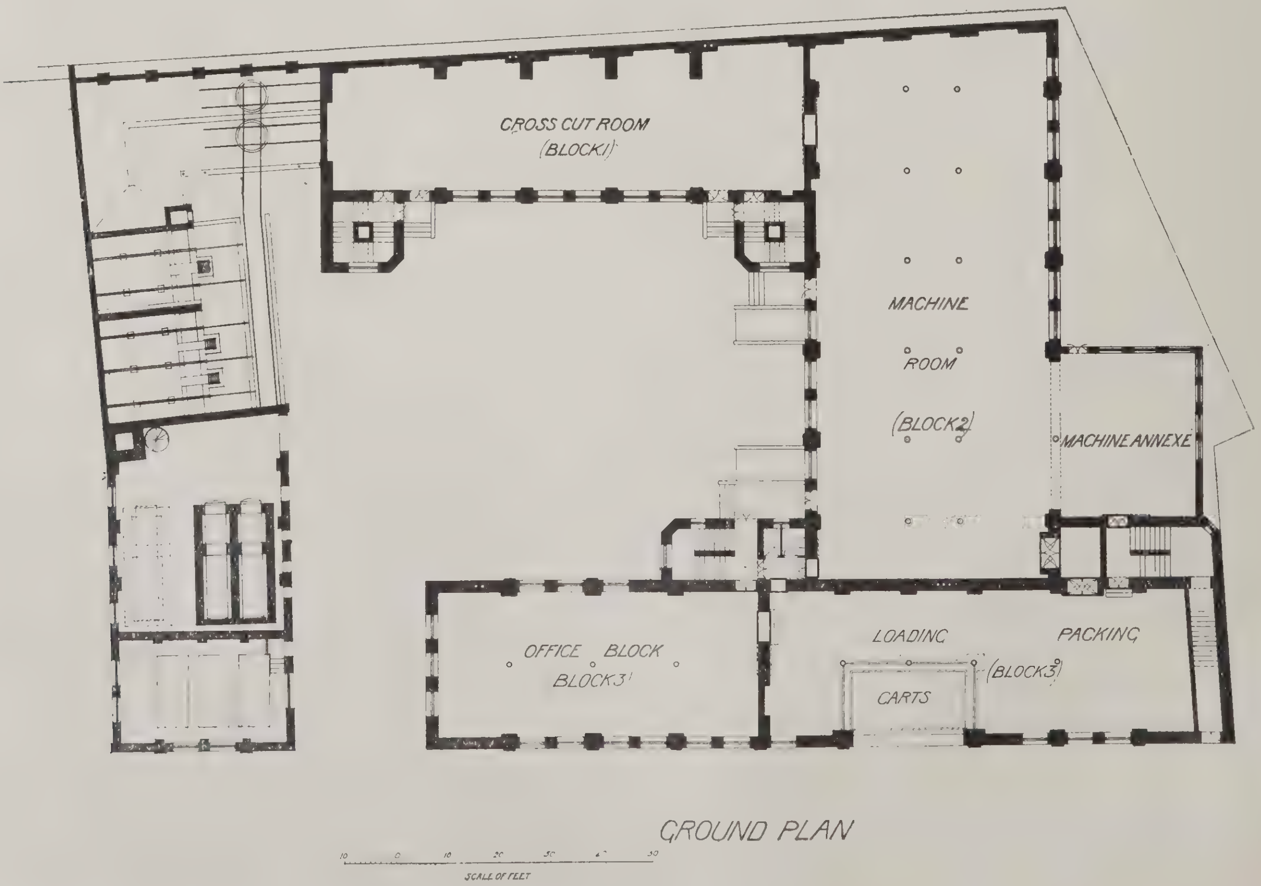
Of the buildings facing the main structure, the boiler-house, with its chimney 80ft. high, is the most important, containing not only boilers, but also dynamo rooms, &c., for creating the necessary power plant, the whole of the installation being worked by electricity.

Dust-removal contrivances, ventilation and heating apparatus are all on modern lines, worked from this central boiler-house.

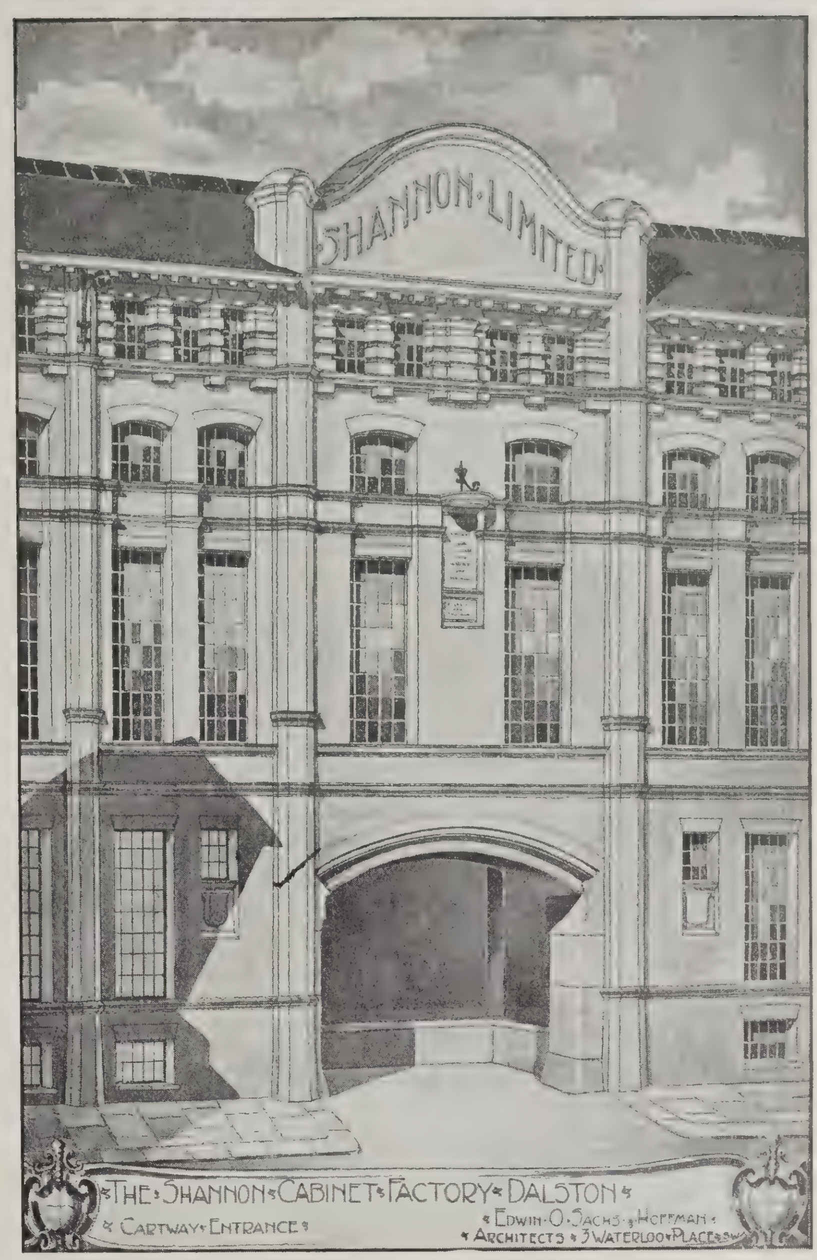
The site that has been left vacant on the other side of Tyssen Street for the moment is the future location of a large warehouse for the Company, which Mr. Sachs has so contrived as to materially assist the general ensemble of the group, particularly if permission can be obtained from the local authorities to arch over Tyssen Street.

As to the exterior architectural treatment, an attempt has been made to follow the example of Mr. Aston Webb, inasmuch as Mr. Sachs has given the factory an architectural treatment and not erected the usual factory monstrosity generally associated with our industrial work.

The factory is one that merits the attention of architects, both in respect to construction, equipment and design, but it further merits their attention in respect to the modern methods of wood-working practised in the factory, which should be of general interest to all connected with the building trades, as it embodies everything that is modern in the handling of wood, the fitting together of joinery and the practice of cabinet-making.



THE SHANNON CABINET FACTORY, DALSTON, LONDON N.E. EDWIN O. SACHS AND HOFFMAN, ARCHITECTS.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THE FIRE PREVENTION CONGRESS.

(Continued from p. 316, No. 439.)

THE International Fire Prevention Congress, convened by the British Fire Prevention Committee, resumed its meetings on Tuesday, July 7th, at Caxton Hall, Westminster. Mr. Edwin O. Sachs presided, and there was a large attendance of delegates and representatives from the provinces, the colonies and foreign countries.

A paper on "The Prevention of Loss by Fire in the United States of America," compiled by Dr. Edward Atkinson (president of the Boston Manufacturers' Mutual Fire Insurance Company), was read by Mr. J. P. Gray (delegate of the Boston Manufacturing Mutual Insurance Company). The following is a summary:—

The problem presented to the underwriters of the United States and to the community as a whole, is totally different from any problem that could be found in any European country, especially in Great Britain. First, the climate or climates of the United States vary from those of Europe in matters that have an important bearing upon the construction of buildings. Within the great section which extends from the Atlantic to the Pacific, between parallels of latitude 35 degs. to 45 degs. N., where are found the larger part of the population, the greater number of factories and workshops, the principal cities and public buildings, and by far the greater number of the public school buildings, there are very great variations between summer and winter, the common range of the thermometer being from 30 below zero Fahr. (−34 degs. C.)—sometimes lower—to 90 Fahr. (+32 degs. C.), and sometimes higher. There is also a great variation in the constant of humidity.

The next variation from European conditions is to be found in the huge abundance of timber, both resinous and hard wood, and the relative scarcity of good building stone in the earlier period of the history of the country. As yet no building stone has been discovered corresponding to the stone which is so much used in France and Belgium, which can be cut and carved like cheese, but hardens like iron on exposure to the atmosphere for a short period. It therefore happened that the best material for the construction of dwelling-houses in the early stages of the growth of towns and cities and throughout the country districts is wood, disposed in a suitable manner and properly finished within and without, rather than brick or stone. It is also true that when these latter materials are used in the ordinary way, that is, without excess of cost in building thick walls with air spaces in the walls to prevent ill-effects of cold, heat and dampness, they are alternately affected by heat, cold and dampness in excess, from which properly-constructed wooden buildings are free. In the extreme cold of winter brick and stone walls become chilled, presently gathering humidity from the atmosphere within the dwelling or building, making the house very damp and difficult to heat; whereas, in the hot summer, brick walls heat very rapidly and become intolerable unless expensively constructed with air spaces. On the other hand, wood is well known to be among the best of the non-heat-conducting mediums, and when disposed in thick sections of heavy mass the building of wood or timber, with properly-constructed roof, is warmer in winter, cooler in summer, more easily heated and ventilated, and in every way a more sanitary building than any other kind yet devised except at very heavy relative cost.

The change which has been brought about in factory construction, under the influence of the Factory Mutual Underwriters, has not been in giving up the use of wood or in any effort to construct fireproof mills or workshops; but in reverting, one may say, to the heavy timber construction of the Colonial period and the disposal of plank and timber within brick or stone walls in such a way that there may be no concealed spaces through which fire may pass out of reach of water. In that way and by evolving suitable safeguards and means of protection, the whole system of constructing the textile factories, paper mills and workshops has been rendered safe and suitable.

It would have been a misfortune had the people of the United States adopted more durable methods by constructing city buildings, factories and workshops of a more permanent kind than they did construct; such buildings would have been, of course, at a much heavier cost, they would have become an encumbrance upon the land, and yet of such solid construction that they might have been incapable of being converted to the right use of modern mechanism. It is only about thirty years ago that a most skilful and competent mill engineer, under whose supervision some of the largest textile factories had been constructed, made the remark that it was not judicious to plan any factory building for a duration of more than twenty-five years except as to the foundations. Had he made that remark a few years later he would not have excepted the foundations. The textile factory and many other industrial buildings constructed fifty years ago were not over 50ft., often less, in width, and some of them were eight or nine storeys high. The next type was a factory or workshop 60ft. in width, five to six storeys high. Neither type of building is fit for modern conditions, and no person could run modern machinery with any profit whatever in the old type of narrow and high factory building. The modern textile factory is seldom more than three storeys in height for carding and spinning, one storey for weaving. Wherever there is room machine shops are built of one storey, and many other industrial buildings are now being constructed in a similar way. The diffusion of light by ribbed or prismatic glass assures an even daylight over very wide areas, with freedom from glare near the windows.

These rules and methods of slow-burning or mill construction and for the diffusion of light are now being established throughout the United States beyond the area of the influence of the Factory Mutual Fire Insurance Companies, by the distribution of documents from the Insurance Engineering Experiment Station now beginning its work under the direction of the writer.

We may now take up the growth and construction of towns and cities. In that, again, a rapid construction of wooden buildings for temporary use has been and still is necessary for the housing of the population. The first buildings, hastily constructed of wood, soon give place to a better class, and, if the town grows, a wider area may be covered with wooden buildings detached from but very close to each other, the only conspicuous building of a durable kind being the public common schoolhouse, for the construction of which reservations have been made from the public land. Presently the detached wooden buildings give place to brick blocks of a more permanent character, and yet not suitable for any very long duration. In the older cities of the East, narrow streets may be bordered by alternating very old wooden buildings and modern structures, safe or unsafe, as the case may be. Hence comes the necessity for very completely organized and efficient fire departments, and yet occasional conflagrations occur. These conflagrations were not unmitigated evils. They were disastrous to individuals and to part of the insurance companies, but they cleared away a great ruck of unsafe and unsuitable buildings, made the way for re-adjusting lines of streets, and both in the end worked improvement in the cities at the cost of the individuals who suffered.

It thus happens that what may be called unsafe methods of construction have been both necessary and expedient in the progress of the development of the country, and that more permanent buildings which would have absorbed a much greater part of the small capital available would have been an encumbrance rather than a benefit. The methods of construction of the country have therefore adapted themselves to the materials, to variations in climate and to conditions of growth.

The safeguards which are now being introduced, notably the automatic sprinkling system, might, in the judgment of the writer, abate more than one-half of the annual loss by fire. The larger part of losses are in the large workshops, factories, warehouses and shops for the distribution of goods. They occur in a relatively small number of fires, each of large proportion. They occur in by far the large majority of cases in buildings which, although not good models, are capable of being well protected by automatic sprinklers, by standpipes and hydrants at vantage points and upon the roofs, so adjusted as to be worked by the public fire department, and by care in occupancy.

The invention of the self-sustaining steel frame building, developed in the construction of what are known as skyscrapers, has brought an entirely new problem before the underwriters as well as the engineers. In the first instance, it was assumed that because a building was made of incombustible material it might be considered indestructible by fire, with very slight protection to the metal from heat. The Factory Mutual Underwriters distrusted this theory, and have, with rare exception, kept unprotected steel beams from being used to support plank floors, and have in recent years caused cast-iron posts, formerly used in the support of factories, to be disused, the preference being given to squared wooden posts.

With the increasing cost of timber and possible scarcity of large logs, it became expedient for the representatives of the Mutual Underwriters to be prepared for so-called fireproof construction. To that end the Insurance Engineering Experiment Station has been established, under the charge of Prof. Charles L. Norton, and under the general direction of the writer, for testing both by fire, by laboratory experiments, and by lapse of time all the different methods of so-called fireproof construction and all the fire-resistant and fire-retardant materials for inside finish.

The experience of the underwriters who insure the steel-framed buildings has not justified the great confidence with which the work was undertaken. Very destructive fires have occurred in buildings of this type which have been filled with combustible contents. Several of the methods of protecting steel from heat have failed, and while the building has stood well, and has, I believe, in all instances been capable of repair, there has been much damage by heat, especially in the upper stories. It has proved that the prevention of loss by automatic sprinklers is as necessary in an incombustible building as it is in any other. A large portion of the biggest department stores are now being equipped. Other fires in incombustible buildings, causing very little damage, have generated so much suffocating smoke as to make them hazardous and to lead toward the danger of a panic.

But beyond this question of fire hazard is the yet more important problem of corrosion, a factor which at the beginning attracted little or no attention. It unfortunately happens that the type of steel used in the construction of buildings is more subject to rapid corrosion than any other type of metal derived from iron ore. Whether or not the skyscrapers will be safe for any considerable period of time, say for a generation, is now an open question. How to protect steel is being made the subject of the most exhaustive investigation, and will be one of the most important subjects dealt with in the Insurance Engineering Experiment Station.

A short discussion followed, after which the members separated to attend the various sectional meetings.

In Section I., "Building Construction and Equipment," over which Privy Councillor J. Stubben (Cologne) presided, the first paper was read by Mr. Arthur Pordage, Firemaster of Edinburgh, entitled "Building Construction from a Fire Brigade Officer's Point of View," of which the following is a summary:—

My experience in combating fire leads me to the conclusion that what is intended as a safeguard too often becomes a danger, and what is theoretically meant for strength is found in the hour of need a source of weakness. The question of the general arrangement or architectural planning of buildings does not enter into my argument; what I propose to deal with is the type of building usually described as being constructed entirely "fireproof," and to offer from my practical everyday experience suggestions which may perhaps induce building constructors to reconsider certain accepted theories in connection with so-called "fireproof" materials.

From the fireman's point of view these "fireproof" buildings have an element of danger added because of their construction, both in the way of increased risk to the fire brigade and the destruction of property.

My decided opinion is that the materials which meet the requirements are those which are not subject to the laws of expansion and contraction when suddenly exposed to the effects of heat. What are such materials? If we may take for our guidance the results of the tests of time we find them principally in timber, bricks, mortar and good plaster.

Floors and Ceilings.

It is the common experience of every fireman that an ordinary wood floor with a thin plaster ceiling underneath has stood the effects of a fire for probably an hour, and though burned through in places still remained in position and with sufficient stability left in the joisting to admit of the fireman passing over it in the course of his operations in extinguishing the fire. If such a floor survives the effects of fire with its slender remains still in position, how much better would a well-constructed wood floor resist the effects of fire under similar conditions. No extraordinary precautions are necessary to construct such a floor, but I suggest that the ends of the joists should be well bedded in the walls, flooring boards of not less than 1in. thick be well tongued together, the spaces between the joisting be filled with pugging or other deafening, and the underside or ceiling coated with 1in. of good plaster on wire laths. Such a floor will resist a fire either from the top or underside sufficiently long to enable any ordinary fire brigade plenty of time to complete their toilet before turning out and arrive in time to do some good work and prevent the floors from collapsing. Where supports are required, owing to the large superficial area of floor space, built timber supports or columns have been known to remain in position and to serve the purpose a second time after having resisted the effects of a severe fire. If these wood posts or columns are wire lathed and coated with good plaster and treated in a manner similar to that often adopted with iron columns they would come out practically unscathed. It will perhaps be argued that this method by no means gets rid of the difficulty with large spans, where iron must of necessity be introduced, but in such cases wrought-iron columns and girders (well protected) should be used to carry wood flooring and joisting, which latter, being impervious to the effects of heat and cold, remain in position, whereas the concrete floor falls in sections and often wrecks the lower floors which would otherwise not have been affected by the fire. I have known it to be argued that the burning of a wood floor gives off so much smoke that the inmates of a building would be suffocated before being reached. To properly understand this point it is necessary to compare the results of fire on both classes of flooring. We must remember that a partly burnt but intact wood floor always affords a means of reaching the inmates, and that before the floor surface commences to burn the fire must have been very severe and the contents of the apartment would almost certainly have been involved. It frequently happens that the flooring in "fireproof" buildings begins to break away at the early stages of a fire, preventing the fireman entering to attack it, with the result that the operations must necessarily be conducted from the outside, thus giving the fire a chance to make some headway. On the other hand, when the water can be got on to the wood floor and supports, there is the possibility of keeping the floor intact.

Partitions.

The reliability of partitions between the different sections and rooms of a building, whether dwelling-house or warehouse, to resist fire, is of the utmost importance, and often determines the fate of the building. The progress of a fire is often regulated by the area of the compartment in which it originates and the internal partitions; therefore much depends upon the time during which the latter remains intact. The wooden lath and plaster partition may be immediately thrown out of court, the light laths with rough edges and the space between being a ready conductor of fire from one part of the building to the other. Internal partitions should be solid, preferably of brick, and continued up right through the building, the joisting at the different floors running through them, so that they practically form an internal wall from the basement to the roof. The advantages of such a partition would be many, apart from being a factor in fire prevention.

Stairs.

Great stress is laid upon the idea of employing stone for staircases as a safe and reliable exit for a large number of persons from a building on fire. This is a very good principle under certain conditions, and these are that a stone stair should be built in a well, apart from the general building and in such a manner that fire or heat cannot possibly get at the underside of the stair. Where a staircase must necessarily run through a building, stone or concrete should be avoided in its construction, but good solid wood (hardwood by preference) is the most reliable under all circumstances. If the underside of the treads be filled in with "deafening" and coated with good plaster, such a stair will remain in position during the progress of a fire long after it has been impossible for any human being to traverse it. If the stair should actually get alight, and the fire fed by an open door should even cause it to burn fiercely, so soon as the hose is applied by the fire brigade the fire will be almost immediately extinguished because the actual burning is only superficial, and there will remain sufficient substance to admit of persons passing over the stair.

It may be argued that a stone stair would not take fire at all, and therefore would always remain passable, but every fireman knows that when there is sufficient heat and flame to ignite the wooden structure of a hardwood staircase it is quite impossible for anyone to pass either up or down a stone stair under similar circumstances.

In my preference for wood in the construction of stairs I specially exclude light and flimsy wooden flights of stairs which are so very frequently found in some dwelling-houses, warehouses, &c., and the wooden step ladder almost invariably found in factories. I speak of a well-built staircase with hardwood treads and facings, the underside filled in with deafening and coated with plaster.

Stone, as employed in stairs in ordinary buildings, cannot in any sense of the word be considered to be "fireproof," because it succumbs to the effects of heat and fire more readily than any other material employed in the construction of buildings. That portion of the stone tread which is exposed to the fire readily expands under its influence, whilst the ends, which are embedded in the wall, remain normal, the natural consequence being a fracture near the wall, and the collapse of the projecting portion.

It has been equally demonstrated that iron, and especially cast-iron, is utterly unreliable under the influences of fire; whilst wrought iron will buckle and twist itself out of position, cast iron will collapse entirely.

Roofs.

The matter of the general arrangement of roofs deserves to receive more serious attention than is usually given to this most important part of the modern building. Unfortunately a fire-preventive roof does not appeal to the artistic eye, especially in large modern country houses, where the old English style of architecture with its long sloping gables has found so much favour of recent years. These high roofs admit of the fire running all over the building, and their construction prevents a fire being attacked from the outside until a hole has been burned through the roof. In all buildings where fire prevention is aimed at, the division walls should be carried at least 3ft. or 4ft. through the roof, with a ledging of at least 24in. round the edge, which would admit of men working upon it in case of fire. Such a ledging affords a ready means of both saving life and attacking a fire. The roof is one portion of a building where iron may be used with advantage by reason of the light weight which it has to support and the necessarily exposed condition of its construction. A lightly constructed trussed iron roof reduces the risk of a fire originating and spreading in the roof to a minimum.

To prevent possible misunderstanding I desire to say, in conclusion, that while advocating the more general employment of timber in buildings, I do not include in this category the light pine and deal stairways, thin wooden doors and matchboard lining partitions, but the employment of substantial timber well protected where possible and of course the avoidance of all exposed edges.

Privy Councillor Stubben then read a paper in German on urban fire protection as influenced by street planning and building regulations.

Fireproofing Existing Buildings.

Mr. Max Clarke, A.R.I.B.A. (London) then read a paper entitled "How to make Existing London Buildings more Fire-resisting," of which the following is a summary: One might admit at once that to make all existing buildings in London fire-resisting is a practical impossibility, so that you must take my remarks only as suggestions as to what might be done towards making buildings less inflammable than they are at present. Particular portions of the City of London have unfortunately got the reputation of being what are called dangerous areas. This may be due not only to the buildings themselves, but also to the nature of the goods stored therein, and for this class of building I am afraid little can be done The only thing we can hope for in this division of the subject is to render them less liable to communicate fire to those adjoining.

On the other hand, large numbers of buildings not having within them goods or materials of a particularly inflammable nature are built or fitted up, and particularly the latter, in such a manner as to render them very dangerous when by some unfortunate accident they do get on fire. Many of these buildings in their construction contain all the elements of danger, both to themselves and to their surroundings, and it is more particularly with regard to these that I call your attention. The idea of pulling down London wholesale, or converting all its buildings at one time into what are erroneously called "fireproof" structures is eminently absurd. Still, much might be done at a moderate expense which would render buildings and whole areas much less dangerous than they are at present.

Matchboard Ceilings and Partitions.

For instance, take the one item "matchboarding." It is used in all sorts of places, in most of which it could very well be done without as regards the construction, and it is a material which, so far as safety in case of fire goes, should not be allowed under any consideration whatever. Its use on walls and ceilings, particularly the latter, is much to be deprecated. I am now speaking more particularly of boarding made from soft woods, which when dry and painted or varnished is highly inflammable, the fire passing along it at a high speed, often rendering escape from a building impossible, even in the early stages of a fire. The limited use of hard woods as wall covering for decorative purposes is not objectionable, particularly if fixed without any air-space at the back.

We may now pass on to a form of construction which, alas, is even more common in London than the one above-mentioned, namely, leaving large areas of the floor joists of buildings without any covering whatever on the underside. This is done, of course, with the clearly-defined object of saving money in first cost, and it *does* save a certain amount; but whether that saving is commensurate with the greatly increased risk such a system of construction involves is for you to decide.

I need hardly remind you that the ordinary wood partition with its wood lath and plaster covering, leaving hollow spaces from top to bottom, *should* be a thing of the past.

Lift Enclosures and Doors.

I must now turn to a matter which seems to me to be most important in buildings of the warehouse class, namely, the means adopted at present for the prevention of the spread of fire in lift wells and generally in vertical shafts of this class There is no doubt that this particular risk is not sufficiently considered, and great improvement could be made as regards retarding the spread of fire if all lift shafts were properly enclosed with some form of non combustible material.

The doorways or openings to the lift shafts should not be mere openings, as is so often the case at present, or if the openings are fitted with doors they are too often of an open type, not in any degree preventing the passage of smoke and flame up the shaft. Iron doors are often fitted to openings, in cases where there is a solid enclosure; but the doors are not close fitting and the fastenings are not designed with a proper regard to ease in opening and closing, and quite regardless as to their adequacy for preventing the doors bending or twisting when heated to a high temperature. Where the latter is possible of course flame and smoke pass through the small openings and ignite inflammable material on the other side, thus *contributing* to the spread of fire to an alarming extent.

Another small matter I have observed in connection with iron doors, which should be avoided if proper fire-resisting qualities are to be obtained, is the total neglect displayed in keeping inflammable material at a sufficient distance from iron or other forms of fire-resisting doors. Only by exercising proper attention to this point can the full value of such doors be obtained. A door may in itself be a good stop against fire, though it become red hot; but it is useless if in contact, or in close proximity to, combustible material on one or both sides. Wood floors should not be carried up to the iron door frames, but a fairly wide threshold of concrete, stone, or the like should be formed on each side, and the same remark applies to the whole of the opening on both sides.

Fireplaces.

I shall now call your attention to some of the defects in fireplaces and flues which are being repeated every day in modern building work. Few know the number of fires caused by defects in and about the fireplace. Personally, I am disposed to think that most of the causes are brought about by careless workmanship, and a few perhaps by the use of methods which were quite adequate in former times, before the invention of what are now called slow-combustion stoves, close ranges, boilers, and the like. I place first in point of danger the practice of building half-brick trimmer arches to carry hearths in wooden floors, the arches having the centering left in and forming an open space under the brickwork. The underside of this space is lathed with wood laths and plastered in the same plane, as a rule, as the rest of the ceiling. This form of hearth should give place, in my opinion, to a concrete or other self-supporting hearth, the full depth of the floor joists, having a flat soffit on which the plaster could be applied direct. Next I should like to advocate the use of fireclay linings to all flues, a common practice in many districts, but not in use as a rule in London, where flues are generally improperly bonded and badly built with brickwork only 4½in. thick, in which bad mortar forms a considerable component part, and which after a time drops out, leaving the joints open; this is often assisted or caused by the nails, spikes, or plugs driven in for the purpose of fixing inflammable finishings. Wood finishings should not be fixed with iron spikes in front of flues unless the brickwork is of a greater thickness than 4½in., in fact it is probable that a great safeguard against fire would be effected if woodwork in such proximity to flues was abandoned altogether. It seems to me a cause of danger that flues built with only half-brick surroundings are at times used for high-pressure boilers, kitcheners, and the like, the brickwork being quite hot when work is in progress, and in many cases much too hot for safety. New types of stoves of either the "slow combustion" or "well fire" classes should not be fixed in old houses unless a thorough examination of the hearth and its surroundings is made, numerous fires having been caused from timbers being in close proximity to chimney breasts, quite unknown to the people who fixed new and powerful stoves in old openings.

Areas, Light Wells and Narrow Streets.

In cities like London, where land is of such great value, the size of areas and light wells will always be reduced to the smallest possible dimensions, thereby greatly increasing the risk of fire spreading from one building to another. The same remarks hold good with regard to narrow streets and courts. In cases such as these the only precautions which can be adopted are of a protective nature.

Windows in light wells should not be directly opposite each other, should be fitted with metal, or at any rate with hard wood frames, the glass should be wired or armoured so that when cracked it will not drop out of the frames at once, thus allowing the passage of flame from one building to another with fatal rapidity. In more dangerous cases blinds of non-inflammable material might be used with advantage, or, better still, shutters which would fit the openings closely, constructed in such a manner as to prevent much twisting or buckling, and provided with fastenings which, while admitting of rapid adjustment, would be secure against opening by accident or from falling bodies on the outside. Shutters or blinds for use in courts or areas might be made of woven wire mounted on frames. This form would admit of a certain amount of expansion or contraction without damage to the frame; would admit a certain amount of light, which is always an advantage, and could be seen through from the inside, often a benefit.

In connection with any form of shutters, such as above advocated, the objection to having wood finishings near them cannot be too strongly brought before your notice. Any real advantage the shutters might be in case of fire in an adjoining building would be largely discounted if inflammable material was close to the openings *supposed* to be protected by the shutters.

In Section III., "Storage of Oils and Spontaneous Combustion," presided over by M. Louis Bonnier, of Paris, papers were read by Captain J. H. Thomson (H.M. Chief Inspector of Explosives, London) on "The Storage of Explosives, Petroleum and Certain Chemicals within Densely-inhabited Areas"; by Dr. P. Dvorkovitz (Principal of the Petroleum Institute, London) on "The Necessary Safeguards for the Prevention and Spread of Fires in Petroleum Stores"; and by Dr. B. Redwood (Advisor on petroleum to the Home Office) and Captain Thomson on "The Prevention of Accidents with Petroleum Lamps"

In Section IV. "Fire Survey and Fire Patrols," addresses were delivered on "The Value of Fire Patrol Systems in Harbour Property," by Mr. W. H. Hunter (engineer-in-chief Manchester Ship Canal); on "The Influence of the Fire Service on Fire Prevention," by A. Dittman, (chief officer, Bremen Fire Brigade); and on "Some Notes on the General Fire Preventive Measures Adopted in Hungary, having Primary Regard to Rural Townships and Villages," by J. de Bolcs (Hungary).

Section V. "Fire Losses and Insurance," was presided over by Mr. Charles Hexamer, President, National Fire Protection Association, U.S.A., who read the first paper on "The Principles of Fire Insurance Practice in the United States." A paper on "Fire Prevention through Schedule Rating," afterwards read by Mr. H. Wilmerding, secretary of the Philadelphia Fire Underwriters' Association, and another by Mr. F. M. Guiswald, general inspector, Home Insurance Company, New York, on "Standards for Town Water Supply and Fire Protection from the American Insurance Point of View."

The Congress was resumed on Wednesday, Mr. Edwin O. Sachs again presiding. Mr. Guy Pym, M.P., first read a paper on "The Necessity of Placing Fire Brigades on a Sound Legal Basis," moving the following resolution: "That this Congress consider it most necessary that fire brigades should be placed on a sound legal basis, and that it is advisable for their efficiency that they should be supervised by a Government department." Sir William Preece seconded the motion, which was carried unanimously.

In Section I. (Building Construction and Equipment) the first paper was read by Mr. Bernard Dicksee, district surveyor, London, on "Fire Preventive Section of the London Building Act."

Mr. Ellis Marsland, district surveyor under the London Building Act, read a paper on "The Planning and Arrangement of Large Retail Commercial Establishments," which we summarize as follows:—

In considering the question of the planning and arrangement of large retail commercial establishments, there are at least four points to be taken into consideration. Firstly, the interests of the proprietor; secondly, the safety and convenience of the customer; thirdly, the local building regulations; and fourthly, the claims of the fire department.

Considering firstly the interests of the proprietor, they may be detailed as follows; — Plenty of window space, plenty of floor and wall space upon which he may erect his counters and fittings, and plenty of light, preferably from the north.

The customer requires ample staircase and elevator accommodation, plenty of gangway space, and easy exit and egress.

The building regulations may require a limited amount of cubical space; therefore the building, if a large one, will have to be divided into compartments, and these shut off from one another by fire-resisting doors.

The fire department claims that any outbreak of fire may be quickly localised, the occupants passed to a place of safety, and that short work be made of any outbreak by reason of its being attacked from more than one point. Also that adjoining premises be not unduly endangered.

This is the problem set the architect in planning and designing a building of this character. Much, of course, depends upon the site and its disposition.

I assume a site with the not unusual accompaniment of a frontage to two streets. The site, for the purposes of this paper, will have a frontage to the respective streets of 70ft. or 22 metres, and a depth of, say, 200ft. or 66 metres. It is also assumed that the building regulations limit the cubic capacity of buildings of this class to 250,000 cub. ft., as in the London regulations. This is done because I feel that dividing a building of this description into compartments is a right course, in the same way as it is considered the right principle for a vessel to be divided into watertight compartments. Assume for the purposes of the paper we place a building four storeys in height, which would mean some 55ft. from the ground floor to the level of the top of the topmost storey. The cubical contents of such a building would require that it be divided up into three compartments. I would adopt what may be termed the *well and compartment* system.

The proprietor has, I suggest, ample floor and wall space; his counters, fittings, and showcases can be disposed as he wishes, and the light is provided by means of large lantern lights from the roof, throwing a flood of light down the well on the several floors, in addition to any side lighting that, perhaps, might be available.

The customers have six ample staircases running from ground floor to roof, with an elevator provided to each. The door openings in the compartment walls are opposite one another and in direct line with the exits into either street. Should an outbreak of fire occur in any compartment, the customers on each floor would pass through the doorways, and could make a safe exit in either direction.

It is necessary that all the floors and supports be of fire-resisting construction, and all iron and steel work protected by concrete or hollow tile casing. There being nothing but the contents to burn, the task of the fire department would be a simple one for the following reasons: That a fire on any floor could be attacked from above and below. The openings in the party walls would be a means of getting readily at the seat of the fire, and at the same time affording a chance of escape in an emergency. The well and lantern would form a shaft for the escape of smoke, and the flat roof would afford access to this from the several staircases. The fire-resisting doors in the openings could with facility be closed, and the fire confined to one compartment.

In a building of this class it would be necessary to provide for receipt and dispatch of goods, and also for offices and staff accommodation. Any unpacking, packing, or bulk store department, if situated in the basement, should not communicate with the upper part, except by lift, placed outside the building, enclosed with walls carried up through the roof and covered with a light roof of iron and glass, and the openings on each floor protected with fire-resisting doors. It is advisable that the offices and counting-houses be in an adjoining annexe, and the dining and sleeping accommodation for the staff placed over and in this annexe, with separate exit and staircase and fire-resisting floors.

A. B. Markusowski, adjutant, City Fire Brigade, Budapesth, then read a paper in German, intitled "Some Notes on Fire Prevention, having particular regard to Theatre Safety."

In Section II. (Electrical Safeguards and Fire Alarms), presided over by Sir William Preece, papers were read by Mr. Alexander Siemens, PP.I.E.E., on "Safety and Control Arrangements for Fire Alarms" and Mr. G. H. Oatway (Glasgow) on "The Necessity for Automatic Fire Alarms with direct Brigade Communication."

Section IV. (Fire Survey and Fire Patrol) was presided over by Prince Alexander Lvoff (Russia), and papers read were by Mr. Gorham Dana (Inspector of Underwriters' Bureau, New England, Boston, U.S.A.) on "The Care of Private Fire Appliances," by M A. Goldoni (Milan) on "Fire Survey and Fire Watches in Theatres during Performances," and by Herr R. Czermack (hon. president of the Austrian Fire Brigades' Union) on "The Question of Technical Instruction for Volunteer Fire Brigades in the interests of Fire Protection."

Mr. Dana in his paper said that the chief desire of a large class of property owners seemed to be to get fire appliances installed to the satisfaction of the underwriters, in order that they could get their promised reduction in rate, and then to let the costly and complicated appliances take care of themselves. In some of the large department stores, where a large number of lives as well as large values were at stake, complete instructions and description of devices were issued to all employees. In the majority of plants, however, most of the employees knew little or nothing about the fire appliances, and in case of fire either wasted a great deal of time and work to poor advantage or else lost their heads entirely and accomplished nothing. The only way to care for such fire appliances was by systematic inspection.

Lieut.-Colonel Fox remarked that nothing was more dangerous than to have fire appliances stuck about the walls of a public building when they were not in an efficient condition. Until some kind of system of inspection was instituted he would not recommend rebates being given by insurance companies.

In Section VI., Mr. W. H. Merrill, jun. (the Underwriters' Laboratories, Chicago) read a paper on "The Testing Principles adopted at the National Fire Prevention Laboratory of Chicago," and Herr Jaffé (Berlin) another on "The Testing Principles adopted at the Royal Technical Research Laboratory, Charlottenburg, and at other fire tests in Germany."

The Duke of Marlborough presided in the evening, at the Criterion, at a dinner to the Colonial and Foreign Delegates to the International Fire Prevention Congress. He announced that he had addressed a telegram to the King tendering their good wishes and respects, and in reply had received a message stating that the King sincerely trusted that the deliberations of this important and representative body would lead to a further development as to the best means to be adopted in regard to the prevention of fire and to the saving of life in cases of fire.

M. Lépine, Prince Alexander Lvoff, Chief Officer Griersberg, Chevalier Goldoni, Professor Woolson, and Sir John Cockburn responded to toasts.

The concluding meeting of the Congress was held on Thursday. In section II. papers were read by Mr. E. C. de Segundo, A.M.I.C.E., on Electric Wiring and Electric Risks, by Mr. Hip. Cazier (Creil) on "Electrical Risks in Theatres," and by Mr. Alfred Hands, F.R.Met.S. (London) on "Necessary Practical Safeguards against Lightning."

In section III. Prof. Medem (University of Greifswald) read a paper on "Spontaneous Combustion," and Mr. F. W. Hardwick (Sheffield) another on "Underground Fires." Prof. Ira H. Woolson, of Columbia University, New York, read a paper on

"Non-inflammable and Fire-retarding Wood,"

of which the following is a summary:—

Among the various materials for reducing fire is the so-called "fireproof wood." First of all, let us have a clear understanding of what is means by the term "fireproof wood." Strictly speaking the processes of treatment do not make the woods *fireproof*, but simply render them fire retardants.

New York City is probably now using more fire-resisting wood than any city in the world. This results from two causes: first, the Building Law, which requires that such treated wood shall be used throughout all buildings over twelve storeys (or 150ft. in height); and secondly, to the fact that the city proper is too limited in area to spread, and enormously high buildings have become necessary.

It has been my privilege, under the direction of the Bureau of Buildings, to test most of the wood which has been used in these buildings. For the year ending the first of this month, I have tested and reported upon upwards of 3,500,000ft. The greatest part of this material was for floors, which were laid on the top of strictly fireproof floor construction of the concrete or hollow tile. The balance of the material was used for trim.

The impregnation of wood with chemicals to render it fire-resistant is by no means a new idea. Numerous experiments with various chemicals were made as early as 1825 by Fuchs, Gay-Lussac, Boucherie, and later by Löchtin and other continental chemists. However, it is within the last few years only that the business has been put upon a practical commercial basis.

Granting the value of fire-resistant wood as a structural material, the next problem is to determine what degree of fireproofness should be exacted, and how the standard of quality can be maintained.

In the early stages of experimentation it was customary to build a small house of the wood to be tested, usually duplicated by a house of untreated wood; then applying a vigorous fire both inside and out, and noting results. This method possesses spectacular elements which are very convincing, and while it may be useful as a general test to demonstrate the degree of immunity from fire that a wooden building may be made to possess, the heavy expenditure of time and money required for such a test precludes the possibility of employing it for regular series work. This is the only value such a demonstration possesses, for the results of fire tests made upon wood treated a year or so ago may bear no relation to the product of the same company to-day. It is essential for public safety that regular serial tests should be made upon all material delivered for use, as is the custom in the manufacture of steel, cement and other structural materials.

Unfortunately there is no recognised test for fireproofed wood.

An effort was made a year ago by the Building Bureau of New York City, in conjunction with the various fireproof wood manufacturing companies, to decide upon some standard method of test; but the project was abandoned. The present method of testing is as follows:—

When a shipment of lumber is prepared, an inspector proceeds to the works, and selects at random one sample from every 2,000ft. of material. This is sent to the laboratory and tested, reports being sent to the Building Bureau and the manufacturer. Two tests are applied to each sample. One a "shavings test," which is a test used by the U.S. Navy, and the other a test devised by the writer, which for want of a better name is called a "timber test."

The shavings test, while useful in a general way to determine the flaming properties of treated wood is, nevertheless, unsatisfactory. We are now making series of different tests in an endeavour to supplant it with something more reliable. The test is conducted as follows: a pan 1ft. in diameter and 6in. deep is mounted on legs. The bottom is formed by a heavy wire screen of $\frac{1}{2}$in. mesh. This wire bottom is covered with a layer of shavings 2in. deep, and a Bunsen burner is applied underneath for twenty-five seconds; then the burner is removed, and the lengths of time during which the shavings support (1) flame, and (2) glow are recorded, and also the area of shavings burned.

The idea of this test is that shavings from properly-treated wood will not support flame any considerable time, and that the flame will gradually die out without material enlargement of the burned area. After test, the remaining shavings are thrown away. There are no means for making a permanent exhibit of the results, except by photographs, which would be difficult to take and quite unsatisfactory. The wood must be accepted or rejected on the judgment of the operator, based upon notes taken while observing the test.

Besides these obvious disadvantages, there are two other strong objections to the shavings test: first, the extreme difficulty of always maintaining the same conditions of flame and heat under the shavings; and second, the impossibility of securing a uniform quality of shavings for tests. The most serious objection, however, to the shavings test, and the one which, in the writer's opinion, is fatal to its use as a standard method of comparison, is the impossibility of making the shavings of uniform size and quality.

To avoid the difficulties of this and similar tests, the previously mentioned "timber test" was designed. Though not entirely satisfactory, the results, as a whole, have been gratifying. During the past two years the writer has conducted over 4,000 tests upon fireproofed wood, the majority being "timber tests." Scarcely any criticism of the method of test has been offered by clients, though the results were often not gratifying.

The specimens for this test are accurately cut to a size $1\frac{1}{2}$in. by $\frac{3}{4}$in. by 12in. These "timbers" are tested in pairs by being laid across the top of a 6in. gas crucible furnace, in which a constant temperature of 926 degs. C. = 1,700 degs. Fahr. is maintained. This particular temperature was chosen because it is given by the New York Building Code as approximately the heat of a burning building. At the end of two minutes the specimens are removed, and duration (1) flame, and (2) glow noted for each.

The temperature is under constant control by means of a Le Chatelier pyrometer, the "couple" being placed between the two specimens, thus recording the heat exactly at the point of application. The proportions of gas and air are regulated to furnish a vigorous flame 8in. to 10in. above the furnace, so imitating an ordinary fire.

After test, the specimens are sawed in two at the middle and tracings made of the unburned wood. These tracings are then carefully measured by planimeter and the percentage ratios to the original cross-section calculated. The percentage of unburned wood is printed upon the tracing of each specimen, and then blue prints are made which become a part of the permanent record.

In general, the untreated woods show a cross-section area approximately 10 to 25 per cent. less than the treated samples. However, the value of the "fireproofed" wood cannot be rated by this feature alone. Account must be taken of the tendency to ignite and support combustion. This is indicated by duration of flame and glow after the specimen is removed from the fire. In every instance the contrast in time of flame and time of glow, between the treated and the untreated wood, is very marked. The average duration of each taken from 688 tests on four varieties of treated soft woods was 7 and 12 seconds. The same data taken from 846 tests on four varieties of treated hard woods was 10 and 14 seconds.

Similar calculations based upon tests of untreated wood, though not averaged from nearly so many tests, gave for soft woods, flame, 1 min. 19 sec.; glow, 1 min. 53 sec.; and for hard woods, flame, 2 min. 31 sec.; glow, 6 min. 29 sec.

Those figures give a ratio of 1 to 11 and 1 to 9 for flame and glow between treated and untreated soft woods, also 1 to 14 and 1 to 27 for hard woods. That is, the tendency of untreated woods to burn is 10 to 20 times that of treated woods. This measure of the property of retarded combustion is as important as the determination of the percentage of unburned areas, for in the first stages of a fire, minutes are valuable. Experience has shown that a variation of 5 per cent. should be allowed in cross-section area, because of structural differences in the wood, fluctuation in temperature, and personal error in measuring. In fact, like all investigative work, it is never safe to estimate average values from the results of a few tests.

The lumber is thoroughly dried before testing, and care exercised to keep everything uniform.

The specimens are placed so the side which was originally the outside surface of the board faces the fire. This is necessary because the Building Bureau permits 1in. outside treatment on floor sleepers and other large materials, which is encased in concrete or a coating of other fireproofed wood.

It will be noted that hard woods, like long leaf yellow pine, oak and maple, when treated, differ only slightly in unburned area from untreated lumber. They are naturally "slow-burning" material. It would scarcely be necessary to fireproof hard wood if the preservation of structural strength were the only consideration. But the danger from inflammability should make a surface treatment imperative. Soft woods which waste rapidly under flame should be treated throughout.

Although treated wood has many advantages as a fire retardant, it also has its failings, the worst being its tendency to become hydroscopic. There are processes which claim avoidance of this tendency to gather moisture when exposed to dampness, but I have had no opportunity to prove their merits. Because of this difficulty, the Navy has discontinued the use of fireproofed wood, except for interior trim, furniture, &c. When in this damp condition a new difficulty arises, because the chemicals employed produce a corrosion on metals. Neither of these difficulties appear harmful where the wood is ordinarily dry and protected by paint, varnish or oils.

A strong point in favour of the treatment is, that the wood does not seem to become perceptibly more combustible by the application of oils and varnish.

A further defect of treatment is to weaken the wood and make it brittle. Although this does not always result, it is a recognised possibility, and the Navy specifications reject material which has lost over 30 per cent. of its original strength.

Whether the treatments are permanent, I am not prepared to state. When used under ordinary conditions of dryness, and protected as it usually is, I see no reason why well treated wood should not remain sound and effective indefinitely. However, I believe, the question is one to be systematically investigated.

There are two other well-known defects, namely, discoloration and difficulty in working due to hardness. Both of these are increased by excessive treatment, hence the manufacturer is always tempted to lessen the treatment. This fact is the only argument necessary for regularly testing the material as delivered for use.

Last, but not least, from a builder's point of view, the wood is costly. But considering the awful destruction of life and property which fire constantly causes, the saving of expense should not be allowed as an excuse for the use of inflammable materials which invite public calamity.

In Section V. Mr. W. H. Stratton read a paper on "Fire Hazards in America from an Insurance Point of View," Mr. J. Sheppard one on "The Importance of Statistical Research for Determining the General Causes of Fire," and another by Mr. F. M. Grizwold on "Standards for Town Water Supply and Fire Protection from the American Insurance Point of View."

In Section VI. Chief Officer Welsch (Ghent), read a paper in French on "The Necessity of Generally Standardising Testing Operations"; Mr. Edwin O. Sachs, read the following paper on

"Proposed Standards of Fire Resistance."

The executive of the British Fire Prevention Committee, having given their careful consideration to the common misuse of the term "fireproof," consider the term "fire-resisting" more applicable for general use, and that it more correctly describes the varying qualities of different materials and systems of construction intended to resist the effect of fire for shorter or longer periods, at high or low temperatures as the case may be, and they advocate the general adoption of this term in place of "fireproof."

Further, the executive, fully realising the great variations in the fire-resisting qualities of materials and systems of construction, consider that the public, the professions concerned, and likewise the authorities controlling building operations, should clearly discriminate between the amount of protection obtainable or in fact requisite for different classes of property. For instance, the city warehouse filled with highly inflammable goods of great weight requires very different protection from the tenement house of the suburbs.

The executive are desirous of discriminating between fire-resisting materials and systems of construction affording *temporary* protection, *partial* protection, and *full* protection against fire, and to classify all building materials and systems of construction under these three headings. The exact and definite limit of these three classes is based on the experience obtained from numerous investigations and tests, combined with the experience obtained from actual fires, and after due consideration of the limitations of building practice and the question of cost.

The executive's suggested minimum requirements of fire-resistance for building materials or systems of construction will be seen from the standard tables appended for—I. Fire-resisting floors and ceilings. II. Fire-resisting partitions. III. Fire-resisting doors, but they could be popularly summarised as follows: (*a*) That temporary protection implies resistance against fire for at least three quarters of an hour. (*b*) That partial protection implies resistance against a fierce fire for at least one hour and a half. (*c*) That full protection implies resistance against a fierce fire for at least two hours and a half.

The conditions under this resistance should be obtainable, the actual minimum temperatures, thickness, questions of load, and the application of water can be appreciated from the annexed tables by all technically interested, but for the popular discrimination – which the executive are desirous of encouraging—the time standard alone should suffice.

Standard Table for Fire-Resisting Floors and Ceilings.

Classification.	Sub-Class.	Duration of Test at Least.	Minimum Temperature.	Load per Superficial Foot Distributed.	Minimum Superficial Area under Test.	Minimum Time for Application of Water under Pressure.
Temporary protective class.	A	45 mins.	1500° F.	Optional	100 sq. ft.	2 mins
	B	60 mins.	1500° F.	Optional	200 sq. ft.	2 mins.
Partial protective class	A	90 mins.	1800° F.	1 cwt.	100 sq. ft.	2 mins.
	B	120 mins.	1800° F.	1½ cwt.	200 sq. ft.	2 mins.
Full protective class -	A	150 mins.	1800° F.	2 cwt.	100 sq. ft.	2 mins.
	B	240 mins.	1800° F.	2½ cwt.	200 sq. ft.	5 mins.

Standard Tables for Fire-Resisting Partitions and Single Doors, with or without Frames.

Classification.	Sub-Class.	Duration of Test at Least.	Minimum Temperature.	Thickness of Material.	Minimum Superficial Area under Test.	Minimum Superficial Area under Test.	Minimum Time for Application of Water under Pressure.
					For Partitions.	For Doors.	
Temporary protective class.	A	45 mins.	1500° F.	2in. & under	80 sq. ft.	20 sq. ft.	2 mins.
	B	60 mins.	1500° F.	Optional	80 sq. ft.	20 sq. ft.	2 mins.
Partial protective class.	A	90 mins.	1800° F.	2½in. & under	80 sq. ft.	20 sq. ft.	2 mins.
	B	120 mins.	1800° F.	Optional	80 sq. ft.	20 sq. ft.	2 mins.
Full protective class.	A	150 mins.	1800° F.	2½in. & under	80 sq. ft.	25 sq. ft.	2 mins.
	B	240 mins.	1800° F.	Optional	80 sq. ft.	25 sq. ft.	5 mins.

It is desirable that these standards become the universal standards in this country, on the Continent and in the United States, so that the same standardisation may in future be common to all countries, and the preliminary arrangements for this standardisation are already in hand.

Builders' Notes.

The Additions to the Borough Sanatorium, Brighton, have been supplied by Messrs. E. H. Shorland & Brother, of Manchester, with their patent double-fronted Manchester stoves in richly-glazed faïence.

Mr. Ebenezer Stiff has decided to retire from partnership in the firm of J. Stiff & Sons, of the London Pottery, High Street, Lambeth, S.E. His retirement will take effect as from April 1st last. Owing to continuous ill-health, Mr. E. Stiff has taken no part in the conduct of the business for some years past, and no difference in the methods or management of the firm will result from his retirement.

The Gordon-Bennett Cup Race.—It is interesting to note in connection with this race that the tents occupied by the timekeepers and route-guardians were supplied by the Willesden Paper and Canvas Works, Ltd., and also that the flags—triangular and square—having direct signalling signifiance were made of Willesden paper. This latter was necessary owing to the curling propensities of ordinary bunting. Willesden canvas was also much in evidence in connection with car covers, &c.

Law Cases.

An Insurance Test Case.—At the Bolton County Court last week Robert W. Kenyon, builder, Spa Road, sued the Life and Health Assurance Association, Ltd., Edinburgh, for indemnity under a policy of insurance. A large number of builders were in court, as the action was regarded as a test case. In November last, one of plaintiff's workmen, a man named James Crook, was working at Messrs. Blair & Sumner's bleach works. He was helping in the erection of an iron pillar, when the pillar fell and caught Crook, who succumbed to his injury. At the County Court arbitration the widow of Crook was awarded a sum of £130. Plaintiff was insured with the association, who repudiated liability and resisted the claim. For the defence, it was contended that the work in which Crook was engaged was of a hazardous nature, that plaintiff did not sufficiently disclose the class of his business, that the work done by Crook did not come within the terms of the policy, and therefore plaintiff was not entitled to indemnity. Judge Bradbury found that the work was covered by the policy, and gave a verdict for £166 14s. 4d., with costs. It was intimated that the verdict would be appealed against.

SANITARY INSTITUTE CONGRESS.

THE twenty-first Annual Congress of the Sanitary Institute was opened on Tuesday, July 7th. The president, the Earl of Stamford delivered his inaugural address at the Technical College in the evening. He said he would direct attention not so much to the scientific side of sanitation as to its general aspects and scope, to its effect upon history, and to its application by means of political and administrative methods. For without such application duly organised and co-ordinated, all the scientific knowledge in the world became practically of little avail. Now that entomology had taught us that the malaria germ was borne through the air by the anopheles mosquito, he hoped hygiene might enable us to deal with that evil and relegate tropical fever to the limbo of the sweating sickness, and thus open up the resources of the rich but deadly regions of West Africa.

The president went on to speak on the subject of modern sanitation in its connection with the home. The scientific study of matters affecting the public health had, he said, resulted in the accumulation of a mass of knowledge and information as to the effect of overcrowded and unhealthy dwellings on the national health. Much of the ill-health and disease in slums was directly traceable, not to the neglect or default of the landlords, but to the personal defaults of the poor who dwelt in them. Vicious and drunken habits and disregard of personal cleanliness were powerful factors with which it was difficult to deal by legislation. The only way to cope with personal neglect would be by education of such people, or by the education of their children. But it was not sufficient that the child should be taught merely to observe certain hygienic regulations. The moment was singularly appropriate for directing special attention to this most vital question of hygienic training for teachers.

Referring to the conditions of factories and workshops, the president said in spite of this immense advance, in certain noxious trades and in the "sweated" industries, many of the evils and horrors of the old pre-factory system days were being faithfully reproduced. A little consideration, however, would show that the partial failure of the Factory Act was due not to any inherent weakness in the system itself, but to imperfections in the law, the chief of which had been (1) the insufficient powers given to local authorities; (2) the overlapping of functions between factory and sanitary inspectors; and (3) the lack of any adequate control by which compulsion might be brought to bear upon defaulting local authorities.

"In drawing your attention to noxious trades and 'sweated' industries," the president added, "I desire to enforce the view that they are not only injurious to the persons more immediately concerned, but to the whole nation."

Speaking of bacteriology, the president referred to a new discovery, or rather departure, of this science. As we already knew, the life-products or excreta of micro-organisms were inimical to the organisms themselves, and to that extent protective to the human being inoculated with them, but the substances contained in those products were in some cases irritants to the human body. It would, therefore, be a great step if the life-juices of the bacteria could be extracted so that the active principle contained in their bodies could be utilised unmixed with the noxious excreta. By means of liquid air pathological bacteria were now rendered brittle, and could be ground up so finely that their cell-contents became accessible and could be extracted.

In regard to sewage disposal, the growth of population and its increasing density, especially in our urban districts, made the question of the treatment and disposal of sewage more and more important every year, and the full solution of this much vexed and much discussed problem was undoubtedly one of the most urgent and important aims of sanitary science. The intimate relation of the question to the pollution of streams and rivers, and to the purity of our water supply generally, added to its interest and importance.

In dealing with the sewage problem there was a most important practical matter which preceded the question of treatment. He referred to a matter of the greatest interest to the inhabitants of the West Riding of Yorkshire, namely, the passage of trade effluents into the sewers and their consequent mixture with domestic sewage. The Commissioners had paid special attention to the question of trade effluents, and had come to the conclusion that while the existing law was apparently precise, the difficulties attendant on its application in any particular case rendered uncertain the position and rights of any particular manufacturer. The Commissioners believed that the only cure was to alter the law and the alteration they recommended was that it should be "the duty of the local authority to provide such sewers as are necessary to carry trade effluents as well as domestic sewage, and that the manufacturer should be given the right, subject to the observance of certain safeguards, to discharge trade effluents into the sewers of the local authority if he wishes to do so."

The Corporation of Bradford, however, strongly dissented from the views of the Commissioners, and urged that all traders should be entitled to discharge the trades effluents into the public sewers upon terms which should be uniform and based on standards, and that in all cases provision should be made by traders for removing solids from, and regulating the flow of the effluents into the sewers. "It may be questioned," continued the president, "whether there is really so much difference between the Commission and the Corporation as the latter appears to think."

Whatever differences of opinion there might be as to the mode of dealing with the trade effluent, all parties appeared to be quite content to make the Rivers Board the tribunal of appeal in disputes between the manufacturer and the local authority. If legislation was to follow the reccommendations of the Commission, the setting up of a central authority would be of the utmost importance, for it would be the co-ordinator of the scheme of reform. It would form a new department of the Local Government Board, and its first duty as soon as set up would be to constitute rivers boards for suitable areas all over the country. In constituting them regard would be had to the following considerations:—(1) They would be created to enforce the Rivers Pollution Prevention Act; (2) each should have jurisdiction over a whole watershed; (3) the area would be sufficiently large to secure skilled officers.

But the advantages of such a central authority did not end there, for it might exercise supervision and control over all important matters affecting water supply. Some of these were brought prominently before the Local Government Board in October last by a large and very influential deputation representing, in addition to that Institute, the County Councils Association, the British Association of Waterworks Engineers, and the Underground Water Preservation Association. The deputation emphasized three points: (1) The pollution of rivers and other sources of water supply; (2) the taking of water for sale outside the area of the supplying authority, to the detriment of local interests in the areas from which it is taken; (3) the waste of water.

At the conference of municipal representatives on Wednesday Mr. M. S. Briggs read a paper on

Cottages for Agricultural Labourers,

of which the following is a summary :—

The so-called cottages erected by artists and other bohemians to recruit in the country at the week-end are also of no use as types to follow. The published plans of such places seem to be chiefly composed of "ingle-nooks" and "dens," and utter disregard for sanitation. Much may be saved by an architect who has a practical knowledge of the cost and worth of his material. Good stone cottages, with parlour, living-room and detached washhouse, cost £350 to £400. The cost of a good brick cottage, such as we build in blocks of from two to four, is hardly ever less than £200, and the necessary rent is heavy for a labourer's pocket. Concrete cottages can be built for slightly less than this. The idea of a common-room in cottages built in small blocks seems to be rather Utopian. Such a room is generally employed either as a reading-room, parlour, or washhouse. The last is most feasible, perhaps, but we have yet to find the happy spot where two or three separate families will sit, eat or work harmoniously together without the strife of tongues. In designing cottages the prejudices of the cottager must be taken into account, as well as regard for his health.

First of all we must determine the accommodation required on the ground floor. On this point there is the greatest diversity of opinion and practice, but we may assume as indispensable a living-room, free from such furniture as a sink or copper; secondly, accommodation for the said sink and copper, with provision for all dirty work to be done there; thirdly, a ventilated cupboard or small room to serve as a larder. As optional we may class a parlour and a detached washhouse. The most elementary type of plan I have seen is that adopted by the Liverpool Corporation for their concrete flats. Here there is only a living-room, 15ft. by 10ft. 3in., with a large fireplace, and sink and copper together occupy a space of only about 4ft. by 3ft. 6in. at the back. The want of a larder is here evident, as a living-room cannot be kept cool enough for the storage of food. The space for washing is also too small. It should be remembered, however, that these flats only cost £100 each. The Guinness Buildings in London and Dublin, erected since 1889, have living rooms of 150 sq. ft. area, and a ventilated food-cupboard; common washhouses and bathrooms are provided. The new model dwellings at Bristol (1901) have living-rooms 14ft. by 14ft. (1st class), or 14ft. by 13ft. (2nd class), and washhouses 8ft. by 4ft. 6in. The living-rooms are well lit, have kitchen grate and oven, and the washhouses contain boiler and small coal-cupboard. From these examples we may assume the following as absolutely essential: (i) a living room of 150 sq. ft. area, containing a range; (ii) a ventilated food cupboard; (iii) a small washhouse or scullery with copper or sink. To these I should like to add an innovation, namely, a bathroom. We will now consider two types of plan in detail, of which most others are modifications. (*a*) The front door enters a lobby about 3ft by 3ft., with stairs (2ft. 10in. to 3ft. wide) running up, and with the living-room door on the left. The living-room is 160 sq. ft., and includes a large fireplace and plenty of cupboards. A good left-hand light for cooking is needed. The best room, whether kitchen or parlour, should face towards the road. The height of these rooms downstairs is a matter of much difficulty. Various experienced men hold that a height of 7ft. 3in. to 8ft. is sufficient. The by-laws insist on 8ft., but many model dwellings are made 8ft. 6in. to 9ft. 6in.

On the whole, for an ordinary small dwelling, 8ft. seems high enough where no gas is burnt. Out of the living-room one door opens into the larder. This need not exceed 3ft. in width, but should have shelving, best in stone. This small room of course should have a window if possible, but if not, air-grates will suffice. The other door from the living-room enters the scullery (10ft. by 6ft.), which in a cottage of this sort is the most difficult part of the plan. In a recent article in the BUILDERS' JOURNAL by Mr. Wyand, a most interesting solution of the problem was given. In a space only 6ft. by 5ft., room is found for a sink, a 20-gallon copper, and a bath with hot and cold water supply. Mr. Wyand explains that such a system would provide a bath for an additional cost of £3, as against £30 required for a small bathroom and hot-water supply with the cheapest of fittings. This seems a most successful solution of a longstanding difficulty, and the fact that the scullery is not in use when the bath would be required is an additional factor in its favour. The sink should be of the Scotch pattern or "jaw-box," which can be used as a wash tub. Cold supply only is needed. Many authorities consider that a cottage scullery sink should not be trapped, as traps are apt to get out of order, but should be emptied by an open pipe to discharge over a "Duckett's" 3-gallon tipping basin kept above the ground. The drainage of such cottages as we are considering is now carried out almost exclusively on the E.C. system. The E.C. should be isolated from the house, but must not be far away. House refuse is best kept in the galvanised dustbins sanctioned by the by-laws, these being much better than brick ash-pits. The second type of plan differs from the first in that a parlour or sitting-room is added. Such a room need not be made as large as the living-room and need not have a large fireplace, but should be well lit and entered from a front lobby. The sink must in any case be kept out of these inhabited rooms. In my opinion the parlour is quite an unnecessary adjunct, as a large well-lit kitchen is up to the expectations of the agricultural labourer. Detached washhouses of course have obvious advantages and where money permits may well be adopted. The size should be about 8ft. by 6ft. As an accepted canon of decency a cottage for a family must have three bedrooms. The area of bedrooms should not be less than 80ft., and one of them, at least, should be larger. When cottages are built with only two bedrooms I consider that the local authority should have the power of limiting the number of inhabitants. Every bedroom should have a small mantel register fireplace. As the labourer will sleep with a closed window we must give him higher rooms. This height may be obtained in the roof. Rooms with the slope of the roof forming a large part of the ceiling may be made even warmer than an ordinary flat plaster ceiling by laying the tiles on a bed of concrete plaster over the backs of the rafters. In the discussion that followed Mr. F. W. Jowett (Bradford) urged that in building cottages provision should be made for good-sized gardens. A garden attached to a house was of greater value than an allotment some distance away, because the occupier could work it in his spare moments. Mr. E. B. Jay (Epsom) held that it was impossible to have sanitary houses until the people had been educated in habits of cleanliness. He hoped the rural district councils would not impose any unnecessary restrictions on cottage property, which would raise the rents.

At the conference of Medical Officers of Health on Wednesday, Mr. T. F. Cass, of Hull, read a paper on "Some Aspects of the Sanitary Control of Bakehouses," from which we have summarized the following points in relation to design and construction.

Bakehouses.

Very common structural faults in bakehouses arise from the methods of construction of the floors and tops. Many of the older floors are composed of brick on edge, or 9in. sq. paviours laid in sand. The ideal pavement for either ground floors or upper floors of bakehouses is undoubtedly good Portland-cement concrete, laid in such a manner as to be easily cleansed by washing. The only objection to concrete is that the workmen complain of its dryness and heat affecting their feet, causing hardness of the epithelium to such an extent as to give severe pain. This objection is probably a valid one, but doubtless the difficulty could be overcome. The tops of many bakehouses are made simply of the joists and wooden floor or the story above, or if the building is of one storey only the top may consist of a pan-tile or slate roof, open to the spars and tiles or slates, as the case may be. Such tops are, to say the least, very faulty; they do not admit of proper cleansing. All ceilings should be plastered, or otherwise properly lined. The reason for sufficient yard space and secondary means of approach to buildings used as bakehouse is so obvious that I need not enlarge upon it, except to say that I have known places where the soil and filth from privies have had to be carried through bakehouses because there was no other road.

All the requirements of the Factory and Workshops Act and the Public Health Acts relating to water supply, sanitary conveniences, drains, ash-pits, and sleeping apartments should be strictly complied with. The floors and tops should be free from dampness and constructed of, or lined with, a smooth impervious material (preferably the floors of cement concrete, walls lined with glazed brick or tiles, and the tops of cement concrete on steel joists). No wooden casements or matchboard linings should be allowed. The floor space of any workroom should not be less than 150 superficial feet; the depth of the floor below the highest ground level adjoining or nearest to the bakehouse should not be more than 7ft.; the height from the floor to the ceiling should in no case be less than 8ft. 6in., and the ceiling should not be less than 3ft. above the highest ground level, which will be found to be quite little enough for the purposes of lighting and ventilation.

Windows should be provided in all workrooms equal to not less than one-tenth of the floor space, made to open directly to the open air close to the ceiling, and to half the extent of the window area. No window should extend below the ground level except in the case of windows looking into an open area not less than 3ft. in width and free from any obstruction of light. No underground bakehouse should be considered suitable in which it is necessary to use artificial light during any period of ordinary daylight. In addition to the windows, adequate and suitable means of permanent ventilation should be provided, also means for carrying away any vapours or fumes *directly* from all ovens and gas-stoves into the open air or chimney flue should be provided. Through ventilation should be insisted upon.

No drain should be allowed to pass immediately over any part of the bakehouse or oven, and there should be a free space of about 2ft. between the walls of the oven and any wall of the bakehouse which is backed by the earth above the level of the bakehouse floor, and all area gullies should be provided with suitable valves to prevent flood waters from the sewers entering the building. The approaches to an underground bakehouse should be by means of properly constructed and efficiently lighted stairs, furnished with proper hand-rails, and, if internal, with proper screen and door above ground level. No step ladders should be accepted, and no trap-doors or hatchways should be allowed in the ceiling of the bakehouse for any purpose whatever.

Public Baths.

Mr. Snell also read a paper on "Public Baths; the Influence of Planning and Construction upon the Cost, Maintenance and Adminstration." The following is a summary: The idea that any sort of site is good enough for baths is radically wrong. It has been responsible in London especially for the selection of some of the most extraordinary sites which have taxed the ingenuity of architects to use to advantage. Such sites almost invariably entail straggling, and therefore uneconomical plans.

Not infrequently "Service corridors" are provided, but they are a useless expense. It is always preferable to make it impossible for the superintendent to go about the building without passing through one or other of the departments. The attendants are more likely to keep their sections in order if they are liable to be overlooked at any time of the day. In the older baths (and indeed it is the case with some modern baths), it was no uncommon thing to find four separate entrances for bathers, one for each class of each sex. Nowadays, more frequently two entrances only are provided, one for each sex. One pay office therefore suffices, whereas under the former system two at least were necessary. The services of a money-taker, or rather *two*, are thus saved, representing at least £150 per annum in wages alone. Waiting-rooms to swimming baths are so little used that they would seem to be scarcely necessary. In spite of rules and regulations to the contrary, bathers generally crowd round the bath itself and stand about the footways. This is, of course, exceedingly inconvenient and subversive of order. It is not preferable to let bathers in waiting sit or stand in the gallery. Another move in the direction of economy is the abolition of the slipper bath in favour of the spray bath. It is scarcely necessary in these days to compare the merits of the two systems, although it is surprising to find how slowly the latter is replacing the former in view of its undoubted superiority. I will only here remind you of the features which recommend it on the grounds of economy, viz.: It occupies just about half the space of the slipper bath, and uses half, or less than half the water necessary for the former. In an establishment of, say, fifty baths, the saving in the structure and fittings alone would probably exceed £40 per bath, or, say, £2,000, and supposing that each bath was used on an average during the year three times daily, water would be saved to the extent of over 1,000,000 gallons, which at 6d. per 1,000 = £25, or the interest on over £800,. To this must be added the saving in fuel, &c., in heating the water, and less cost of attendance. I believe that a well-appointed and arranged set of spray baths, each with its separate dressing-room, and with common warm and plunge baths, would attract better-class bathers in paying numbers. Well-equipped Turkish and Russian baths at a moderate price should also prove paying departments. Special or medical baths are probably more suitably attached to hospitals or hydropathic hotels. A great deal might be done also to make baths more attractive and inviting. I may instance the circumstance of one particular bath in London which is certainly not better planned nor decorated, nor better, nor indeed so well fitted as many others, and yet it is, or used to be, the most favoured bath in the metropolis. The only reason for its popularity appears to be that the whole establishment is tastefully decorated with growing ferns, which flourish exceedingly well in the warm moist atmosphere of a bath.

Intercommunication.

It is desirable that all the warm baths should be as close together as possible. I remember some time ago reading the description of a design in which the author in effect drew attention to the fact that every section of his scheme was carefully separated from every other, so that there could be no communication between them. I refer to this description merely because it represents the very antithesis of what should be the architect's aim in the arrangement of baths. I should add that his plans showed the warm baths arranged at three different floor levels. The only divisions required are, in the first place, for the separation of the sexes (and this should commence from the general entrance hall), and secondly, separation of the classes, which need only commence at the waiting rooms immediately adjoining the baths. Referring to the plan of the St. Marylebone Baths, you will see that the first and second class bath sections in the case of both men and women are divided by doors only, so that each set is, in a way, interchangeable, and by this arrangement a minimum number of attendants is required, and in the slack hours one only would be sufficient for both classes of each sex.

One of the most important parts of a bath scheme, especially from the point of view of economy, is the engineering scheme. The boilers and engineering works generally should be of the best description and designed on the most economical lines for the highest efficiency, and by this is meant commercial efficiency, and it is better to reorganize, if necessary, the whole of the engineering plant of an establishment, even at considerable cost, than to waste powder and fuel year after year with inferior plant.

Owing to the excessive wear and tear upon all fittings, it is a matter of great importance that everything should be of the most substantial construction. The unavoidable moisture in the atmosphere in baths necessitates glazed or other impervious surfaces for the walls and floors. The importance of absolute cleanliness in every part of the establishment calls also for the avoidance of all angles, mouldings and other repositories for dirt, as much as if the buildings were for hospital purposes. Solidity and simplicity in construction materially affect the question of first cost, and, to an even greater degree, maintenance charges.

The Congress Lecture.

What is known as the Congress Lecture was delivered on Thursday at the Technical College by Mr. John Slater, B.A., F.R.I.B.A. Mr. Slater said he should endeavour to bring before the Congress some of the points of contact between hygiene and architecture, taking each of them in their broadest aspects. He remembered nearly four and twenty years ago, in a paper read before the Royal Institute of British Architects, mention was made of an architect of some eminence at that time who had built a house for a client, and some four months after its completion this architect was asked to come down and inspect the house because some of the drain pipes were stopped and there were difficulties with the plumbing arrangements. The architect was most indignant, and simply told the client to send for his plumber. There is a wider aspect of the question which has not often been dealt with, namely, how far the purely artistic side of architecture is concerned with hygiene. There could be no doubt that since the principles of sanitation had been known and carried out, the percentage of cures of all kinds of diseases had enormously increased. And yet, how much better were prevention than cure! Every year, in the outskirts of all our large towns, acres and acres of new sites were covered with houses for the lower classes, which, even when they were new, were scarcely sanitary. A great advance had been made in artisans' dwellings, which now had the greatest possible attention given to their construction, but as soon as one got just above the artisan class, the poor struggling clerk or the shopman and the small tradesmen, one would find that the dwellings themselves were not one whit better than they were fifty years ago. The fact was that of late years the working man had monopolised the attention of the benevolent and the charitable. "I should like to see some capitalist take up the cause of the lower middle classes and start a company for the erection of middle-class dwellings at reasonable rents, and as our municipalities are going in for commercial speculation, they might find this not one of the least profitable. I know that the Artisans', Labourers', and General Dwellings Company, which has gone on these lines, has always managed to pay a dividend." The fact was, we wanted fewer hard and fast lines laid down, and literal specification of requirements in our Building Acts and by-laws, but more discretion left in the hands of those who had to carry out these legislative enactments. This opened up one of the most important questions relative to the health of the people; he meant the standing and qualifications of inspectors and other officials, who had practically the whole matter in their hands. What did we see all over the country? A local builder, who had failed in business, got some kind friends to propose him as building inspector, or perhaps even surveyor, to the local council. In his opinion the appointment of every health officer in the country, and the amount of his salary, should be subject to the approval of the Local Government Board, and then they might make the Acts themselves which have to be carried out much more elastic. The lecturer having given a description of the manner in which attractive looking suburban houses, letting at from £20 to £30 per annum, were sometimes built, and that in many of these, as soon as cases of infectious disease had been nursed in them contamination commenced, and in a few years, it was his firm belief, such houses become what in a hospital ward would be termed permanently septic, and it was almost impossible to get them sweet.

"I am no socialist, but I cannot shut my eyes to the fact that the improvement of the dwellings of the people is a question which is intimately bound up with that of the ownership of the land on which they are erected, and until we can get rid of the middleman in the shape of the speculative builder, who only cares to put up his buildings at the lowest possible cost, we shall never improve the separate small dwellings of the people." He saw no reason why the lower middle classes of this country should not be trusted to fulfil their obligations, and he would not be surprised if, in the next generation, the Government were to take up the question of loans to small householders for the purpose of helping them to buy their own freehold sites and build their own houses. Discussing the question: How far is the health of a people affected by the artistic or æsthetic side of architecture—by matters which are not constructional, but are connected with site, arrangement of plan, surroundings, style, and design? the lecturer said that it was the opinion of an eminent oculist that a great deal of the defective eyesight which was annually becoming more and more prevalent in towns, was due to the fact that these urban dwellers looked so seldom on the pleasant restful green of the woods and fields and so constantly on dull bricks and mortar. Staring, garish, inharmonious tints must have a somewhat similar effect through the eye on the brain as loud, cacophonous sounds have through the ear. He would be sorry to see huge blocks of artisans' dwellings multiplied in the heart of our great cities. The object should be to get the workers away from their work when it is finished by increasing the facilities for quick and cheap transit. It could not too often be dinned into the ears of the governing bodies that upon the health of the people depended the wealth and well-being of the nation.

Engineering and Architecture.

Mr. Maurice Fitzmaurice, C.M.G., president of the second section dealing with engineering and architecture, delivered his address in the Technical College on Thursday, in which he dealt with modern problems for engineers. Referring to the sanitary works in which he had had a part, or which were now under his control, he said that owing to the deaths which had occurred at several places in England from eating shell-fish contaminated by sewage, public attention had been drawn to the question of the disposal of sewage at several places, and London, among others, had not escaped criticism. About 1889 it was thought that the question of the disposal of the London sewage was settled when the system in use at the present time—namely, chemical precipitation and the conveyance of the sludge to sea—was decided on. The installation of this system was immediately accompanied by a wonderful improvement in the Thames.

Previous to 1890 the crude sewage was delivered into the river, while now the precipitated sludge, to the extent of 7,000 tons per day, making a total of over 2,600,000 tons per annum, is carried by steamers to deep water fifty miles below the outfall at Barking and Crossness. The clarified effluent, amounting to 230,000,000 gallons per day, is discharged into the river at the outfalls. He hoped in a very short time that the London County Council would be able to announce the steps which they proposed to take for the further purification of the Thames.

Turning to the question of locomotion in cities and towns, he said he hoped the time might come when a very large proportion of the working classes would think nothing of living six or seven miles from the place where they were employed, and would find that practically no inconvenience was caused by doing so. This state of things would be facilitated by the construction in large cities of underground railways, but in addition to the traffic on underground or elevated railways, an increasing amount of traffic would be carried on the surface of the streets, either by electric tramcars or motor cars. It was necessary to keep the entrances to towns, and the country roads approaching them, of a good width, so as not to throttle the traffic at these places at a future date. The development of motor traffic ought, from a sanitary point of view, to be encouraged. When it was considered that 45 per cent. of the dust carried by the air in streets was composed of organic matter, principally stable manure, it seemed more than probable that a diminution in the number of horses in the streets must be accompanied by an improvement in the general health. The provision of streets and roads of ample width, and the satisfactory maintenance of such thoroughfares, are the best means of encouraging the development of electric trams and motor traffic.

The Sewage Question.

The section then proceeded to consider and discuss three papers upon the sewage problem. The first paper was one entitled, "A Comparison of Chemical and Septic Tank Systems as preludes to Artificial Filtration," and was by Mr. Douglas Archibald, F.R.Met.S. Mr. Archibald said that one of the most prominent features of modern sewage treatment and disposal had been the substitution of bacterial decomposition for chemical precipitation in tanks, before any subsequent filtration over land or artificial beds. The main impulse in this case had been not so much the desire for greater purification as for the elimination of the sludge. The problem would always remain a complex function of several variables. Efficiency of purification, limitations of area, depth, local nuisance, capital and annual expenses, renewals, &c., had all to be considered. In an elaborate statistical paper the author showed that the choice of treatment, according to the lessons which had been gradually learnt, lay between tank settlement of the sewage with or without septic action, and tank settlement aided by chemicals. His experience was in favour of the last-mentioned system.

Mr. W. Kaye Parry read a paper on "The Present Position of the Sewage Problem." He remarked that at the Congress of the Sanitary Institute held in Leeds in 1887, a group of papers was read, each of which had a direct bearing upon the sewage purification question. In the discussion which followed, one of the speakers, with a pardonable touch of sarcasm remarked that they were fortunate in getting that morning from the authors of these papers no fewer than three complete solutions of the sewage problem. Proceeding, Mr. Parry summarised the work done during the past few years, and pointed out the importance of a careful consideration of the cost of the different systems. He complained that sufficient evidence was not given to the public and to engineers of the cost of the installations of the septic method.

Professor Henry Robinson, M.I.C.E., followed with a paper on "The Bacterial Treatment of Sewage," in which he drew special attention to some principles of bacteriological treatment which resulted from experiments made a few years ago by the State Board of Health of Massachusetts, but which, he said, seemed to have been overlooked by subsequent experimenters.

Mr. A. Saxon Snell, F.R.I.B.A., contributed a paper on "Details of a Hospital Ward," in which he discussed the various materials and methods of construction best to be pursued in hospital construction, special attention being devoted to expedients for preventing dust and dirt. We shall publish a summary of this paper next week.

The business of the Congress terminated on Friday, and in the course of the proceedings the sections devoted to engineering, architecture, physics, chemistry and biology held a joint discussion for dealing with the questions of sewage treatment and disposal and of rivers pollution. Mr. K. F. Campbell, M.I.C.E., contributed a paper on the experiments in the treatment of sewage which he had been conducting in Huddersfield, referring to the difficulties encountered in giving practical effect to some of the most used methods of sewage treatment, owing to the presence of a large quantity of fat and trade waste in the local sewage.

Major H. R. Firth read a paper by Mr. W. D. Scott-Moncrieff on "The Standardising of Sewage." Mr. Scott-Moncrieff said that in the treatment of sewage by the biological methods a certain amount of empiricism naturally entered into the matter, and the results attained were frequently arrived at rather by accident than by legitimate argument. With the view of reducing to definite factors the conditions of working he proposed the use of an apparatus which he had designed and the drawings of which were exhibited.

A paper by Mr. C. F. Wike, M.I.C.E., City Surveyor of Sheffield, dealing with experiments carried on in the sewage department of Sheffield, was also placed before the conference. A paper by Mr. A. G. Leigh, entitled "Manufacturers and the Rivers Pollution Prevention Act," was also submitted.

THE HEALTH EXHIBITION.

The Health Exhibition of sanitary apparatus, appliances, and articles of domestic use and economy, which is being held in connection with the Congress, was opened at the Belle Vue Barracks on Tuesday by the Mayor of Bradford, Alderman David Wade. The exhibition will remain open to July 25th. There is a large number of stands, and the exhibition promises to be a great success.

The preliminary list of awards made by the judges were announced yesterday as follows:—*Silver Medals:* British Sanitary Co., for self-acting earth closet; Burn Brothers, for cast-iron drain pipes and fittings; F. C. Calvert Co., for carbolic acid preparations; Davis Gas Stove Co., Ltd., for diamond Metropolitan cooker; J. Duckett & Son, for isolated syphonic closets; W. Glover & Son, for new roadway water sprinklers; Northern Vacuum Cleaner Co., Ltd., for vacuum cleaners; Wilson & Stockall, for brougham ambulance, with convertible stretchers; Wilson & Stockall, for accident ambulance van. *Bronze Medals:* Ames Crosta Sanitary Co., for trapped drain box for tramway rails; Ames Crosta Sanitary Co., for stoneware conduits for electric cables; Ames Crosta Sanitary Co., for surface water gullies; Anti-Vibration Incandescent Lighting Co., for anti-vibration incandescent gas lamps of various patterns; Bradley Star Tap Co., for equilibrium and compensating ball, bib, and meter taps; Burn Brothers, for square gully plug; Burn Brothers, for "Times" drain plugs; Joseph Cliff & Sons, for "Newcliff" intercepting trap; Joseph Cliff & Sons, for Hessell-Tiltman scum channel for swimming baths; Joseph Cliff & Sons, for Imperial registered bath; Doulton & Co, for gunmetal mixing valve for hot and cold water; George Freeman & Co., Ltd, for the "Priory" aluminium bath; George Freeman & Co., Ltd., for Brown's penny-in-the-slot lock for water-closets; Hard York Non-slip Stone Co., for "non-slip" material; J. Hirst & Sons, for adjustable gully channel grates; J. Hirst & Sons, for slop shutes; Holroyd & Co. for excellence of porcelain ware; Kilgerm Co., Ltd., for sprayer for applying liquid disinfectants; Law & Ormerod, for Law's improved dry seats; Henry Leggott & Co., for Leggott & Marsh's smoke-consuming independent range; W. & R. Leggott, Ltd., for general excellence of door and window furniture and brass castings; Mellin's Food, Ltd., for Mellin's food; Moule's Earth Closet Co., for pedestal earth closets; J. Oakes & Co., for glazed stoneware; Patent Sanitary Scoop Co., for gully scoops; C. Pratt & Son, for sick-room furniture; J. S. Reckie & Sons, for air-testing plugs, gauges, and fittings; T. M. Rimmington & Son, for ærated waters prepared from Bradford Corporation water, filtered through porcelain; Ronuk, Ltd., for Ronuk; Sanitaries, Ltd., for combined ash-bin stand and cinder sifter; Sanitary Bin Co., for sanitary bin with self-locking door; Slack & Brownlow, for germ filter with preliminary strainer; H. H. Thompson, for barrel tilter; A. G. Thornton, for general excellence of surveying and drawing instruments; George Barber Wilson, for gully dredger.

The following are a few of the more interesting exhibits:—

Joseph Cliff & Sons.

A large and attractive stand (No. 16) is that of Messrs. Joseph Cliff & Sons, Branch of the Leeds Fireclay Co., where the glazed bricks and general sanitary ware of this firm are well shown. A speciality of the stand is the show of hospital fittings.

Horsfall Destructor, Ltd.

This exhibition contains some items the relation of which to sanitation seems remote, but this cannot be said of the exhibit (stands Nos. 1 and 113) of a portable destructor shown by the Horsfall Destructor Co., of Leeds. This destructor is capable of developing 20 h.p. from any and every sort of refuse —we have seen it flourishing excellently on decayed fish!—and the company is prepared to lend it on hire experimentally to sanitary authorities. It is no make-shift, but a real Horsfall Destructor on a small scale, and should be taken most seriously into consideration by small councils whose districts will not bear the cost of a large destructor.

Oates & Green, Ltd.

Closets, latrines and urinals in various designs and salt-glazed ware are shown at stand No. 21 by Messrs. Oates & Green, of Halifax, including their white enamelled "Taper" urinals, with sloping back.

W. & R. Leggott, Ltd.

Window gearing and door plates and furniture generally form the staple of a very artistic exhibit (stand No. 67) by Messrs. W. & R. Leggott, Ltd., of Bradford, whose designers have succeeded admirably in their door furniture and finger plates.

Doulton & Co., Ltd.

The exhibits of this world-famous firm are always interesting, and that at stand No. 38 in this exhibition is no exception. A number of articles in white-glazed fireclay are shown, and the perfection of the glaze should be especially noticed.

Shanks & Co., Ltd.

Messrs. Shanks & Co. show their new "Modern" wash-down closet, and also their school board closet, at stand No. 2, which has been adopted by the Manchester and other important school boards. The usual attractive lavatory fittings are also displayed at this stand.

W. Summerscales & Son, Ltd.

A curious exhibit (No. 63A) is the curtained sanctum of Messrs. W. Summerscales & Son, of Keighley, upon which is displayed a notice to the effect that they are too busy to exhibit, but will be pleased to show visitors over their works. Probably this astute method is far from unremunerative.

Fireproof Plate Wall Co.

Stand No. 53 of the Fireproof Plate Wall Company, of Bradford, is of interest. The erection is composed of thin partitions of from 2½in. to 4in. thick, fire-resisting, and practically sound-proof. One of the chief features about the partitions is that they are absolutely rigid, and while easily erected, economise space.

Mather & Platt, Ltd.

The exhibit of this firm at stand No. 24 is described as a model of a complete sewage purification works, but it really is of fairly large size and in actual working during the greater part of the day. It comprises Detritus chamber with screen, sedimentation or septic tanks, valve chamber with patent automatic distributing apparatus, and bacteria beds.

Matthews & Yates, Ltd.

Messrs. Matthews & Yates, of Swinton, Manchester, have a stand (No. 39) where their electric fans were in full blast. A special feature of this firm's work is the patent apparatus for sucking up the shavings, &c., from the joinery benches in workshops, and so saving the untidy and inflammable litter generally associated with the woodworker's operations.

Meldrum Bros., Ltd.

At stand No. 18 models will be found of two destructors, one known as the top-feed "Simplex" and the other the front-feed type. The Meldrum destructor furnaces are in conjunction with steam generators of the water-tube type. The capacity of the "Simplex," which has a grate area of 75 sq. ft., is from 40 to 50 tons of refuse per day of 24 hours, while the boiler evaporation is equal to from 450 to 600 gals. per hour nett; allowing 20lbs. of steam per i.h.p., this equals 225 to 300 i.h.p. per hour. The address of the company is Timperley, Manchester.

The Shannon, Ltd.

This firm are exhibiting on stand No. 52 all their well-known office labour-saving devices, comprising the rapid roller damp-leaf copier, filing system and cabinets of all descriptions, card index recording systems, vertical filing cabinets, the Shannon sectional cabinets for building up as requirements grow, and also several of their well-known desks in remarkably cheap lines from £5, office furniture, chairs, &c. The head office and showrooms of Messrs. The Shannon, Ltd., are at Ropemaker Street, London, E.C., but they have also a branch office at 33, Charles Street, Bradford.

Holroyd & Co.

This firm exhibits at stand No. 28 a display of imperial porcelain ware, which is its great speciality, and consists of two porcelain baths and fittings, a few lavatories also in this ware, and cast-iron porcelain-lined bath and fittings, two syphonic closets. A magnificent porcelain 6ft. bath, parallel shape, on pottery feet, and with a wide 4in. roll, is shown, together with a 5ft. 6in. Victorian bath of oval shape and base to floor. The very high finish of these goods and their beautiful glaze obtained for the firm a bronze medal for "excellence of porcelain ware." The crystal drinking fountain attracts considerable attention, and was awarded a bronze medal. This excellent invention projects water straight into anyone's mouth, and so prevents any possibility of disease germs lodging as happens with the insanitary cup usually seen at public fountains.

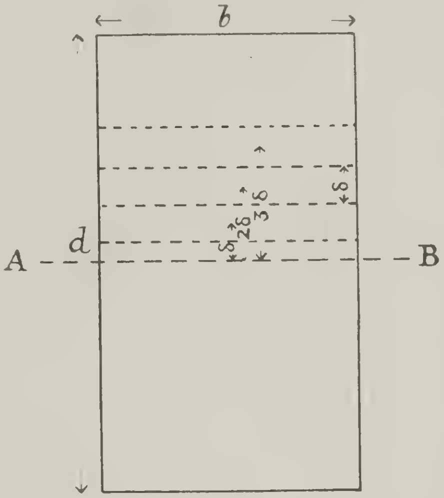
Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Radius of Gyration.

CLAPHAM.—ELÈVE writes: "Please give a clear definition of radius of gyration."

The moment of inertia of a body about an axis is the sum of the products of the weights of the particles of which the body is made up by the square of the distance of each particle from the axis. If we can imagine the whole weight of the body to be concentrated in a single particle, and this particle placed at such a distance from the axis as that the moment of inertia would be the same as that of the body, the distance of the particle from the axis is the radius of gyration. What I mean by a particle is a volume of the substance whose dimensions are very small. If then we know the moment of inertia, I, of a body about a given axis, the radius of gyration is $\sqrt{\frac{I}{m}}$, where m is the mass of the body. It may be of use to explain that moment of inertia is a quantity that occurs primarily in kinetic mechanical questions; for example, if I is the moment of inertia of a wheel referred to its axis, the kinetic energy in the wheel is proportional to IW^2, where W is the angular velocity of the wheel. Now, what has this to do with cross sections, which are not solids, but are plane surfaces? We find it convenient to talk of the centres of gravity of lines and surfaces, though such things have no mass, and consequently have properly no centre of mass; just in the same way it is useful to apply the terms moment of inertia and radius of gyration to plane figures. The student may, if he finds it convenient, suppose the plane figure to have a very small uniform thickness. Suppose the figure to represent a cross section of a rectangular beam, and suppose AB is the neutral axis through its centre, let us take a small rectangle whose area is δb, and the distance of whose centre from AB is δ, its area × (its distance from AB)² is $b\delta \times \delta^2$; take another like rectangle and we have $b\delta\,(2\delta)^2$, and another gives $b\delta\,(3\delta)^2$, &c., till we reach the top of the section we have $b\delta^3\,(1+2^2+3^2+4^2+\&c.+n^2)$, where n is the number of the top rectangle; if now δ is supposed to be very small, the $\frac{\delta}{2}$ which we left at AB may be neglected, and n becomes very large, but $n\delta = \frac{d}{2}$. Now, if you try, you will find that the expression $\frac{n\,(n+1)\,(2n+1)}{6}$ will give you the sum of the squares of n consecutive numbers beginning with 1. Satisfy yourself by trying 2 and 3 and 4, &c., separately $= n$; for example, let $n = 3$, $\frac{3 \times 4 \times 7}{6} = 14$, and $1+2^2+3^2=14$. This expression is found by very elementary algebra. When δ is taken very small so that n is very large, the expression $b\delta^3\,\frac{n\,(n+1)\,(2n+1)}{6}$ is the moment of inertia of the upper half of the cross section about AB. Now, when n is taken "infinitely" large — just as if a man has a million pounds, the giving away of one will make him very little poorer — we may write the expression $\frac{b\delta^3 n^3}{3} = \frac{b\left(\frac{d}{2}\right)^3}{3} = \frac{bd^3}{24}$, and the moment of inertia of the whole cross-section is twice this, or $\frac{bd^3}{12}$. Now the area is bd, and the radius of gyration is $\sqrt{\frac{bd^3}{12bd}} = \frac{d}{2\sqrt{3}}$. If a cross section can be divided up into rectangles, its moment of inertia may be found by finding the moments of the rectangles about the given axis and adding them together. There is also the simple law, that the moment of inertia about any axis is equal to the moment of inertia about an axis through the centre of gravity plus the area multiplied by the square of the distance of the centre of gravity from the new axis (the axes being parallel). Another important point to remember is that the moment of inertia of an area about an axis at right angles to the plane of the area is the sum of the moments of inertia about two axes in its plane at right angles to one another and intersecting in the point where the first axis meets the plane. This has all already been explained in the articles on "Building Construction," and you might have been referred to them, but I know from enquiries addressed to myself that young men who have not got a smattering of the "higher" mathematics are anxious to have an elementary explanation (which needs to be repeated with some patience, and the thing is worth doing). In my youth I read a book entitled "An Elementary Treatise on Rational Mechanics," by the Rev. John Kerr, M.A., published by William Hamilton, 33, Bath Street, Glasgow, and Simpkin & Marshall, London, which uses only elementary algebra. It is not any the easier to read on this account, but for a young fellow who has the perseverance to worry through that book (a small book of less than 300 pages in large type), I can think of no more mentally healthful exercise. I don't say that these particular things are to be found in it. P.



Keystones.

Royal Academy Architectural School.—It is announced that the following students of the Royal Academy have been transferred to the Upper Division of the Architectural School:—A. W. Blomfield, A. E. Bullock L. G. Delmar, J. Swarbrick and L. Wilkinson.

Mr. F. R. Farrow, F.R.I.B.A., has resigned the chairmanship of the commercial section and membership of the executive of the British Fire Prevention Committee and also the title of Hon. Publications Secretary of the International Fire Prevention Congress.

Hereford Cathedral West Front. — An appeal has been issued by the Bishop of Hereford for £5,000 towards the rebuilding of the west front of the nave of Hereford Cathedral. A further sum of £5,000 will be required to complete the restoration of the front of the north and south aisles. The work is to be carried out after designs by Mr. Oldrid Scott, a son of Sir Gilbert Scott, and it is hoped to complete the restoration within the next three years.

The Wellington Monument.—A bronze-coloured facsimile of Stevens's plaster model of the equestrian figure for the Wellington Monument has been placed in position in St. Paul's for inspection by the public during the current week, and by this step the Executive Committee has fulfilled the pledge made some months ago. It should be perfectly understood that the figure is an absolute facsimile of the original model left by Stevens, and untouched save for the addition of the missing hoof and tail which have been copied from Stevens's small sketch model at South Kensington. The pedestal on which it stands has been temporarily constructed in wood from Stevens's later drawings, superseding the more elaborate form shown in the sketch model. Mr. M. H. Spielmann, doubtless under the sting of impending defeat, penned another of his rancorous epistles to the *Times* a few days before the public exhibition, in a vain endeavour to impute bad faith on the part of the Executive Committee. No one, however, who now sees Stevens's crowning composition for his life-work can fail to prefer it to the possibility that might be evolved by the Academical nominee, whose Leighton memorial lies hard by Stevens's work for cruelly handy comparison.

Obituary.

Mr. John Gardner, builder, of Melton Road, King's Heath, Birmingham, died recently at the age of sixty-nine years.

Mr. T. Staton, builder, of Torquay, died last week at the age of eighty-three years. He was born in Charles Parish, Plymouth, in 1820, and went to Torquay when thirteen years of age. He had therefore resided in the town for seventy years, and had seen its growth and taken part in its up-building. For many years he was in the employ of Messrs. Harvey Brothers, and eventually commenced business for himself, and retired about fifteen years ago.

Bricks and Mortar.

Aphorism for the Week.

The Grecian . . . with its perfectness unanswerable as Euclid, self-contained—the one thing finished in this hasty world.

LOWELL.

Our Plates. THE house at Wallingford, of which Mr. Reginald Morphew is the architect, will be built of red bricks faced with smooth plaster finished white. The timber framing to the gables is to be of oak filled in with red brick and plastered. All the external joinery is to be of oak. The windows will be glazed with antique Dutch glass and the leads will be flat and ½in. wide. The roofs will be covered with bright red sandy tiles. The hall and living-room will be panelled in oak and have oak joists showing in the ceilings. The floors will be of oak laid in narrow widths and wax polished. The walls of the drawing-room will be hung with rough pale green canvas and the frieze will be stencilled in various shades of amber on natural-coloured canvas. The woodwork is to be painted white, finished with a stippled surface left flat. An aviary with tiled floor leads out of the drawing-room and will be heated in winter by a small radiator from the kitchen boiler.

Sewage-Polluted Windermere. MR. HENRY W. STOCK, F.R.I.B.A., writes to the "Times" in regard to the proposed sewage scheme for Windermere. He says: "A Local Government Board inspector will hold an enquiry and, like his predecessor, will no doubt recommend the granting of the necessary loan to enable all the additional sewage of this fast-growing neighbourhood to be poured on to the saturated land by Parsonage Bay, Bowness-on-Windermere, where already the shore is fouled by black sewage ooze, and the reeds grow more rankly year by year in the shallows. . . . . Half the charm of river and lake is derived from the purity of their waters, and Windermere and Bowness, with all their well-to-do residents, can well afford the extra cost of buying moorland away back from the lake and pumping and treating the sewage there, as is done at other places where low rates are not allowed to be the paramount consideration. . . ."

A Liverpool Insurance Building. THE new head-office building of the Royal Insurance Co. at Liverpool occupies a commanding site at the corner of North John Street and Dale Street, in the heart of the commercial district. It has been designed by Mr. J. Francis Doyle, the well-known Liverpool architect, and the work of construction has been carried out by Messrs. Thornton & Sons, also of Liverpool, under the supervision of Mr. Doyle, with the assistance of Mr. R. Norman Shaw, R.A., as consulting architect. The style is Classic, adapted to modern requirements. The substructure is of grey Aberdeen granite a height of 300ft. above the pavement level, the superstructure being of white Portland stone, roofed with green slate. On the Dale Street front is a gable rising 110ft. above the pavement. The main entrance is placed in North John Street, and is surmounted by a tower 130ft. high, which forms one of the principal features of the design. At the south end is the entrance for tenants. Another notable feature of the building is the general office of the company on the ground floor, which is quite free of columns or obstructions of any kind throughout its full length. This has been achieved by a novel principle of steel construction, the first and second floors being slung from girders which are placed upon the third floor and rest upon steel stanchions built into the walls Internally, marble, wood-panelling and faïence are largely used for facing the walls in lieu of the ordinary plaster, this material being reserved for ceilings only. The building, rectangular in shape, is about 220ft. long by 52ft. wide. The internal dimensions of the general office on the ground floor are:—Length, 194ft.; width, 48ft.; and height, 21ft. The offices of the manager and chief officials are on this floor facing Dale Street, separated from the general office by a hall 20ft. sq. On the floors above accommodation is provided for the numerous departments incidental to the conduct of a world-wide insurance business, while the basements are reserved for strong-rooms and store-rooms. The boardroom is a large apartment on the first floor, 44ft. long, 24ft. 6in. wide and 27ft. 6in. high. The walls are panelled in Italian walnut to a height of 19ft., and from the cornice of this panelling rises a vaulted ceiling which is panelled and enriched in plaster. Suspended from the ceiling are three antique brass candelabra adapted for electric lighting. These candelabra are of interest, having been made in the town of Utrecht in 1648–9. The firegrate in this room is also interesting, being an original made by Alfred Stevens. On the upper floors, at the south end of the building, are commodious offices for tenants, electrically-worked lifts being provided. The whole of the interior is lighted by electricity and heated by hot water on the low-pressure system. The exterior of the building is enriched by an imposing piece of sculpture over the main entrance, and by a frieze consisting of several large sculptured panels, which were designed and executed by Mr. C. J. Allen, sculptor, of Liverpool, in conjunction with the architect.

Correspondence.

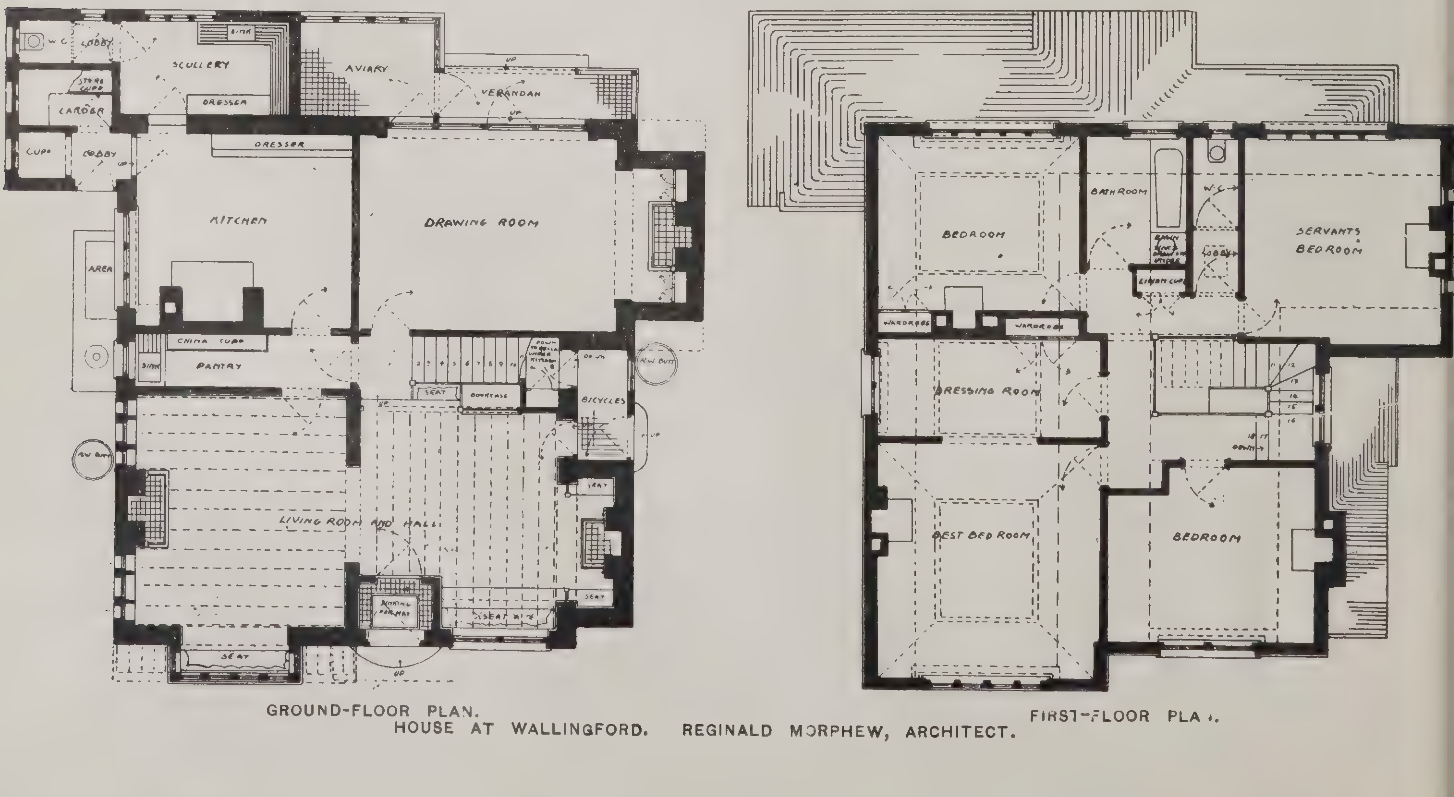
The Strand Improvement.

To the Editor of THE BUILDERS' JOURNAL.

LONDON, W.

SIR.—Apropos of "The Strand Improvement" permit me to point out that the Architectural Vigilance Society, which is raising its voice on the question of the Strand Improvement, is a self-elected body, representing only the opinion held by a small section of London architects and artists. There are a great many architects, well respected in their own profession, who strongly deprecate the idea of "Architectural Shirt Fronts," advocated by the Vigilance Society, and consider that the elevations of buildings should be the honest expression of the purposes for which the buildings are used; whereas the uniformity desired by the Vigilance Society would result in the expression of the taste of a few gentlemen who wish to dictate a preconceived style of architecture, thus excluding those who hold that modern architecture should be the outcome of modern conditions, thoughts and aspirations. By allowing each lessee to select his own architect, and build to suit his own requirements, a chance at least would be given for the creation of a few interesting buildings in the new thoroughfare. But if the "shirt front" principle of design is adopted, we shall have a lifeless display of scholastic revivalism.—Yours truly,

C. F. A. VOYSEY.



GROUND-FLOOR PLAN.

FIRST-FLOOR PLAN.

HOUSE AT WALLINGFORD. REGINALD MORPHEW, ARCHITECT.

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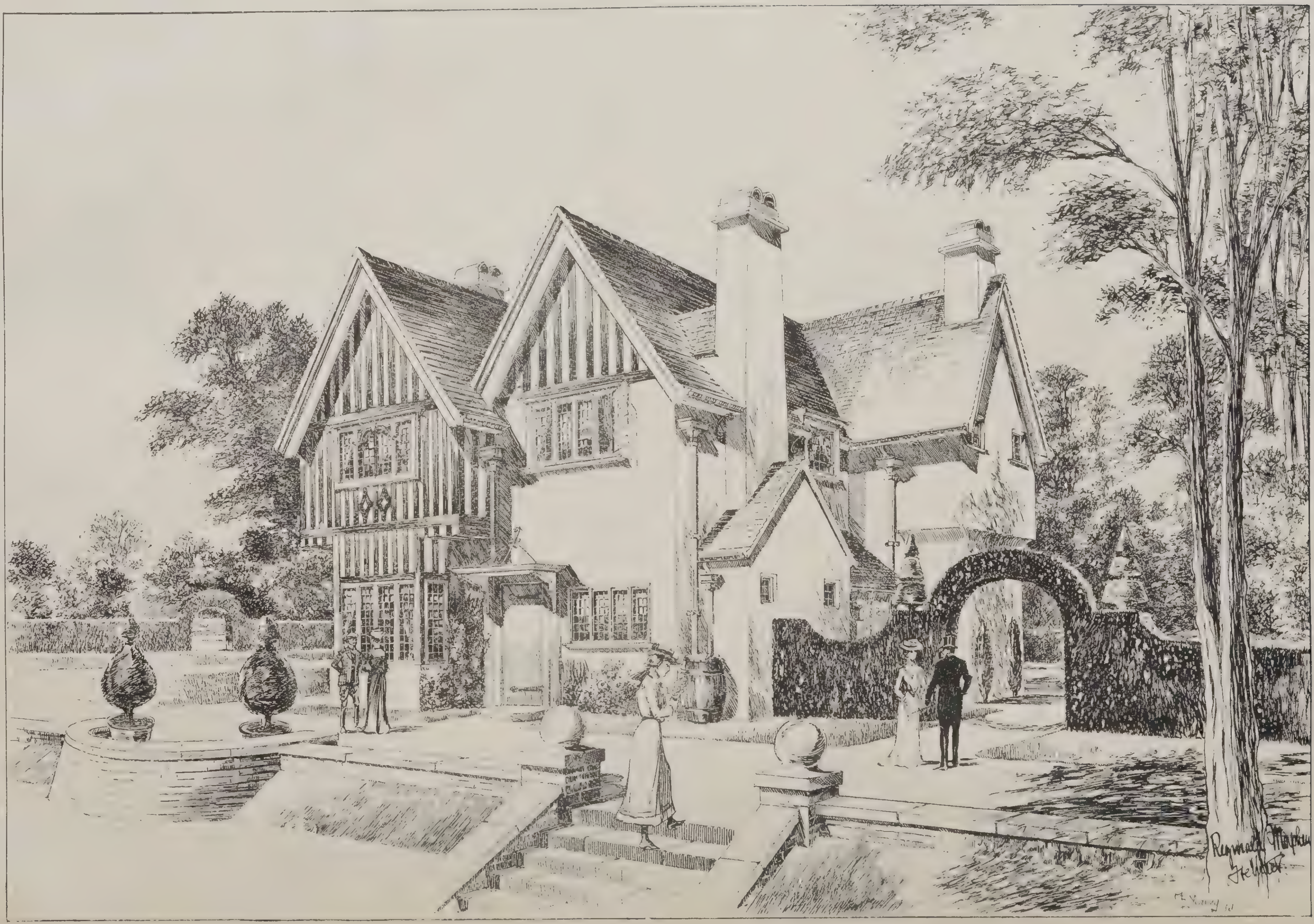

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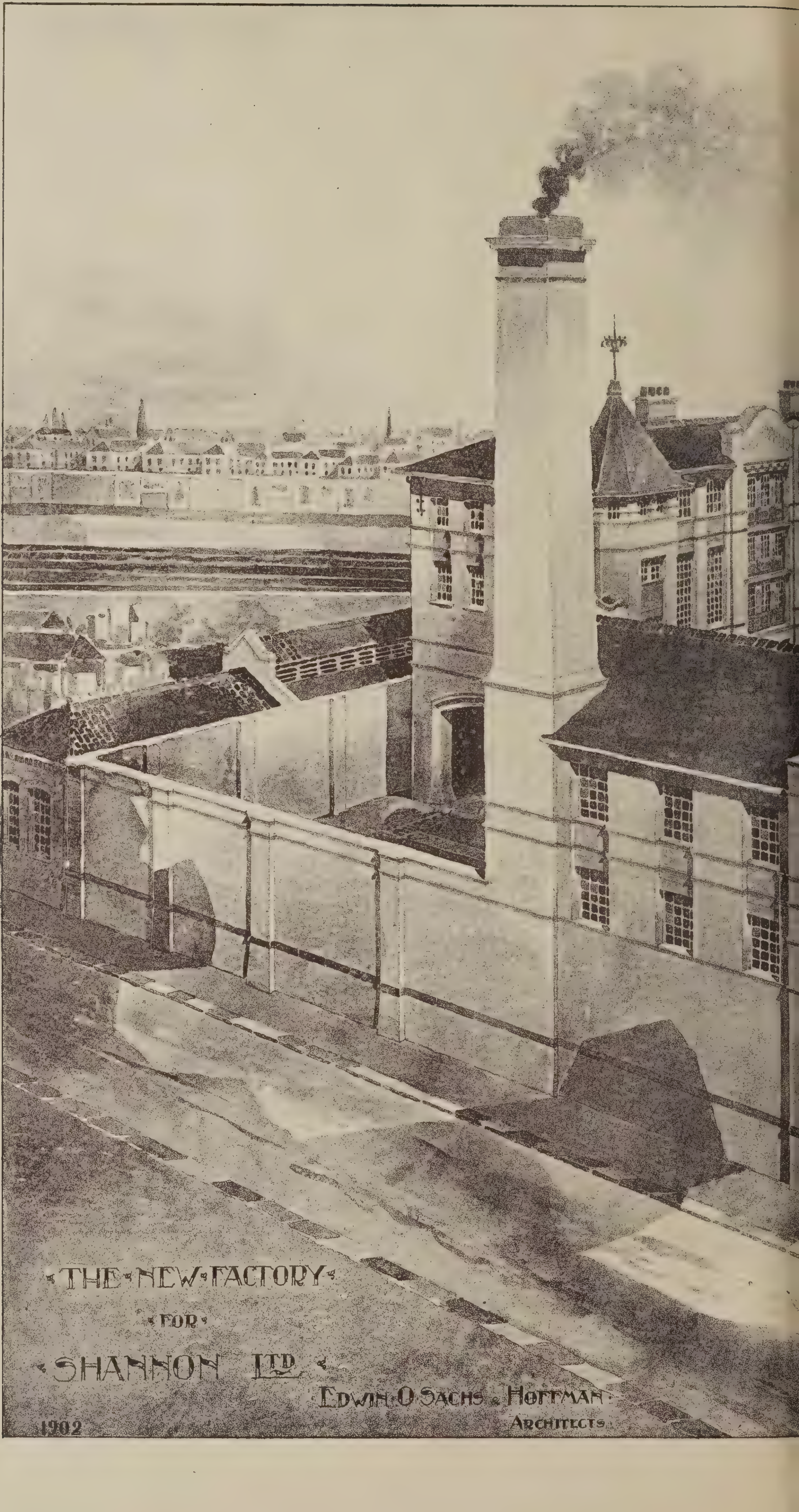

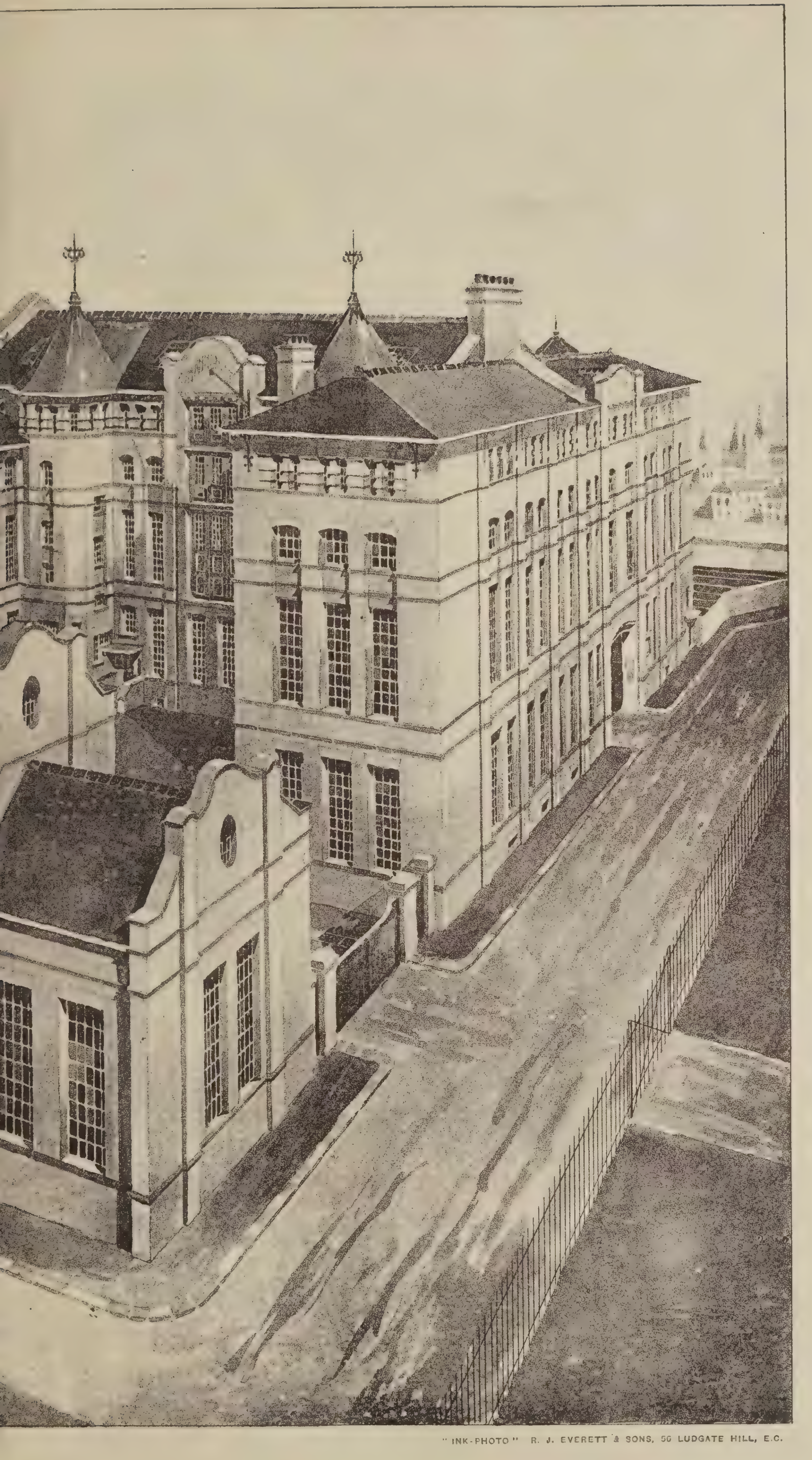

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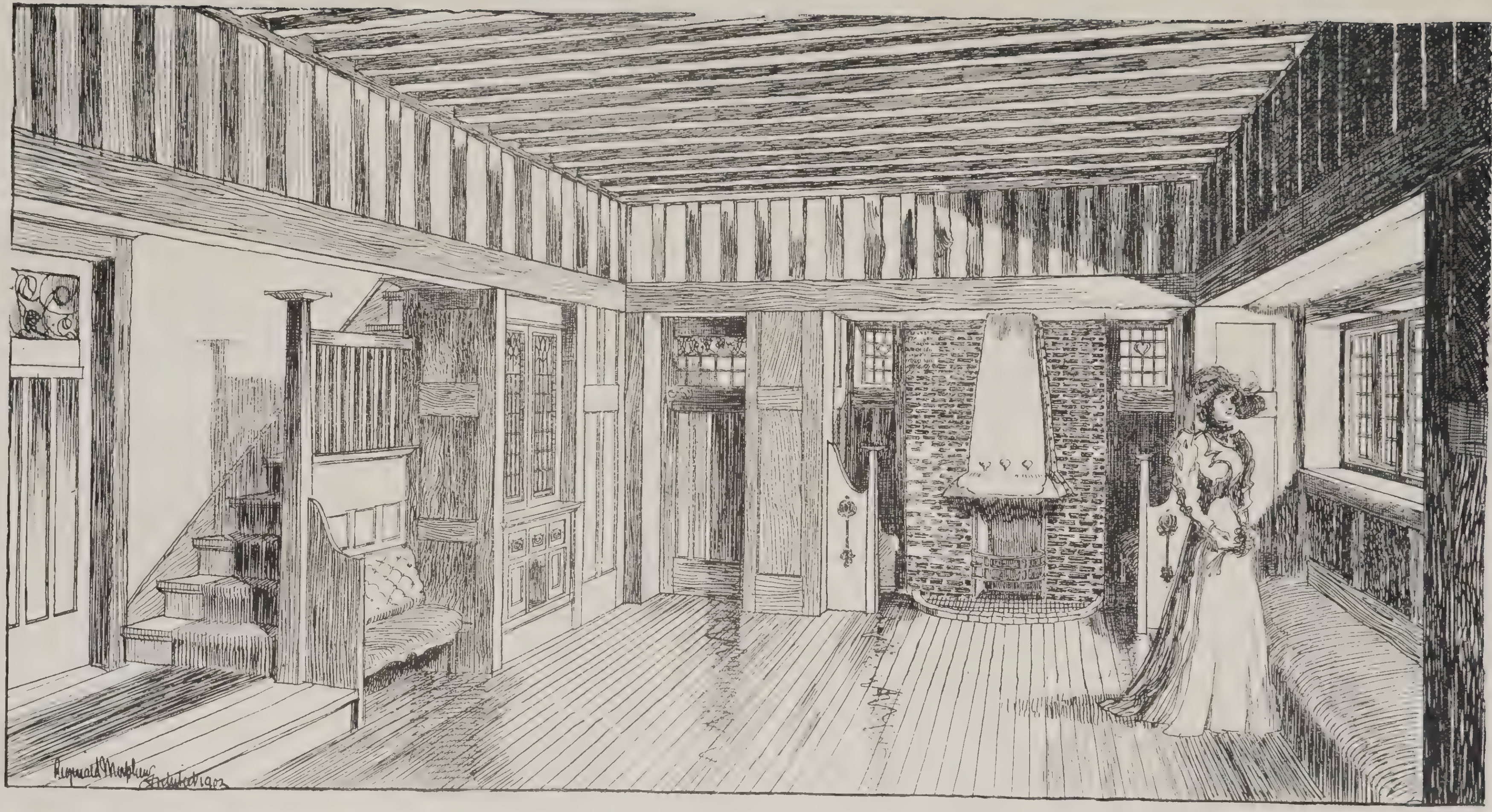

House at Wallingford. Reginald Morphew, Architect.

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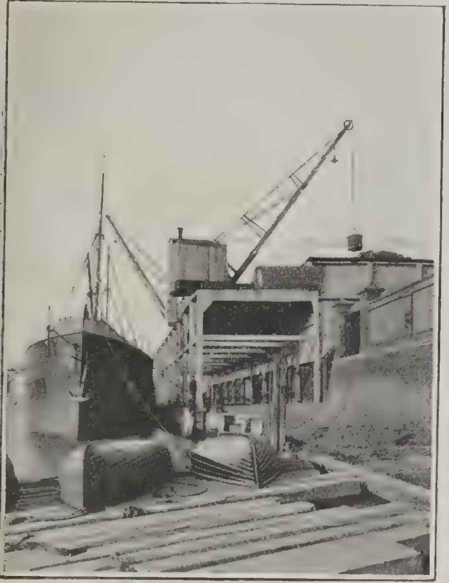
HENNEBIQUE'S FERRO-CONCRETE CONSTRUCTION.

It is only two or three years since that peculiar method of construction known as "ferro-concrete" was introduced into this country from France, where it has leapt with surprising rapidity into public favour for all kinds of buildings and many branches of constructional work for which few persons would have thought it was suitable; but during that short time it has made great strides. It has been proved, however, to possess many advantages over ordinary building methods, its two principal being cheapness and rapidity of construction. Many systems of iron-concrete construction have been originated here and on the Continent, but the one which is generally admitted to be the best is that invented by M. Hennebique, of Paris, with whose name the progress of this method of construction has been connected. As an instance of the importance the method has assumed in France we may instance the fact that the French Government recently created a separate department at the Ministry of Public Works, under the management of M. A. Considère, chief engineer for Ponts and Chaussées (who is the author of standard works on the principles of this kind of contruction), to give attention to all matters elating to ferro-concrete construction, with view to its greater development. It will e seen from this that the method has now ot beyond the experimental stage.



COAL SILOS AT RUDMORE.

The Hennebique system of ferro-concrete onstruction gained the Grand Prix at the Paris Exhibition in 1900 for its inventor, M. Hennebique, of Paris. M. Hennebique's atents are being worked in this country by Mr. L. G. Mouchel, of 38, Victoria Street, Westminster, S.W., who has recently pubshed a large pamphlet explaining the Iennebique system and giving particulars f tests, &c. The volume is well illustrated, nd the large number of examples show how xtensively the system has been applied, and ll readers of this journal who are interested in ne system should write to Mr. Mouchel for a opy.

Mr. Mouchel is a member of the Institution f Civil Engineers of France and has had a ery considerable practice in the application of rro-concrete to all kinds of work. It is, of ourse, a difficult problem to work out all e calculations for the somewhat involved resses in a steel and concrete structure, and erefore Mr. Mouchel generally acts as a ecialist under the architects or engineers who plan the buildings and get out the general design, and the work is executed by English licensed contractors, each of whom works an agreed district.

The general principles which apply in ferro-concrete construction are that the iron shall be so disposed in the concrete that it takes all the tensile stresses, and the concrete takes all comprehensive stresses. The concrete, of course, binds the steel bars together and protects them from damage by fire and oxidization. The great advantages of the system are that girders and columns are so quickly and so cheaply constructed. This is due to the fact that the steel sections used can always be bought in the market, and are not subject to such fluctuation and shortage of supply as built-up sections, which, furthermore, are very laborious to construct. In fact, a girder or column can be constructed in ferro-concrete with fewer men in about half the time it would take to get a built-up girder or column constructed, and it has been found that a building can be erected in ferro-concrete in about one-third the time it would take if specially built-up steel stanchions and girders were used. In addition to the saving of cost in this matter of labour, considerable saving is effected in the expense of annual painting, a necessity with exposed ironwork. The loss of available section due to riveting in the case of built-up steel sections is avoided.

The system, light in construction, gives graceful lines in design, is practically imperishable, and resists fire remarkably well. It might be thought that the adhesion between the iron and the concrete would be destroyed by changes in temperature, but this has been proved not to be so, for the co-efficients of expansion and contraction have been demonstrated by M. Durand-Claye, chief engineer of the French Ponts and Chaussées, to be identical to the fifth decimal. The adherence between steel and concrete is estimated by Professors Baushinger and Ritter at 570lbs. per sq. in. Tests have been made which show that the strength of ferro-concrete construction is practically unimpaired by fire, even when water is turned on from a fire hose on the heated walls and floors. No better system could therefore be adopted than Hennebique ferro-concrete where buildings are required to be fire-resisting. With regard to the all-important point of the preservation of steel when encased in concrete, experiments have gone to show that oxidization does not occur even after many years' subjection to sea-water.

A very material advantage of ferro-concrete is that buildings constructed of it have an almost entire absence of vibration, a fact of the greatest importance in factories, workshops, &c., which carry machinery. This is especially valuable in bridges.

The special features of the Hennebique system are as follows:—In a beam of ferro-concrete the axis of compression is at the top and the axis of tension below, exactly as happens in a rolled steel joist. Now, in the ferro-concrete the compression is resisted by concrete and the tension by the iron bars. But concrete would not alone suffice to form the web (still comparing the ferro-concrete beam to a rolled joist), as it might be subject to tension and slipping. M. Hennebique has therefore devised the system of distributing stirrups along the whole length of the beam, which, embedded in the core of concrete and connected intimately with the upper and lower portions of the beam, makes a solid and compact girder capable of bearing the heaviest loads. These stirrups are formed of hoop-iron of a proper gauge and width. The tension bars are of two kinds, namely, straight bars parallel to the lower face of the beam, and bent or cranked bars placed over them, but in the same vertical plane. The bent bars, taken in connection with the straight bars and the stirrups (the latter being placed closer together at the ends of the beam), constitute an indeformable triangle, and the resistance afforded to shearing strain thus increases near the supports, *i.e.*, where this strain reaches its maximum. A beam so formed is very similar to a timber beam trussed with iron tie-rods and brackets. Any bending strains of the lower bars thus become transmitted to the upper part of the beam and transformed and distributed in the way of compressive strains in the mass of the concrete.

In addition to its use for buildings, the Hennebique system is as largely used for engineering work. Piles are made of ferro-concrete which can be driven in exactly the same way as ordinary piles, and of course possess the advantage over timber and iron of being practically indestructible. They can be moulded to any length or section and driven to any depth without scarfing. Mr. Mouchel is about to construct, on the Hennebique system, a large jetty at Purfleet for discharging and landing goods, of which Messrs. P. W. & C. S. Meik, of 16, Victoria Street, Westminster, are the engineers. This suggests itself in connection with the projected improvements in the Port of London as the very thing to solve the problem of loading and discharging ships in the river.

The following are a few of the works executed in this country by Mr. Mouchel, on Hennebique's system of ferro-concrete construction: Great Western Railway Company's Warehouse at Nag's Head, Borough, S.E.; flour mill and grain silos at Swansea for Messrs. Weaver & Co., Ltd.; warehouse, grain silos and flour mills for the Co-operative Wholesale Society at Newcastle-on-Tyne; immense cold stores at Southampton, constructed on ferro-concrete piling; foundations for electric car sheds at Bournemouth; extension of workshops, Old Foundry, Hull; warehouses at the Royal Albert Docks and Plymouth Docks for the Great Western Railway Company; cattle wharf at Liverpool; sheet piling at Christchurch, Hants, and at Northam; coal barge quay at Southampton for the London and South-Western Railway; jetties at Dagenham, Essex, at Woolston, Southampton, and at East Cowes, I. W.; coal silos at Leeds Electric Light Works.

In addition to his head office at 38, Victoria Street, Westminster, Mr. L. G. Mouchel has branch offices at Grosvenor Chambers, 16, Deansgate, Manchester; Maritime Chambers, Southampton; and at 18, Victoria Square, Newcastle-on-Tyne.

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,,	16	Wallsall—Buildings at Workhouse	Guardians	H. E. Lavender, Architect, Bridge Street, Walsall.
,,	16	Waldon-le-Dale—Church	—	Vicar, Vicarage, Walton-le-Dale.
,,	16	Seabrook, Kent—Police Staton Works	—	F. W. Ruck, 86 Week Street, Maidstone.
,,	16	Cheadle, near Stoke-on-Trent—Hospital	Rural District Council	F. T. Inskip, Surveyor, Brookhouse, Cheadle.
,,	16	Lightcliffe, Yorks—Two Houses	—	Sharp & Waller, 32 Bradford Road, Brighouse.
,,	16	Cork—Two Labourers' Cottages	Rural District Council	J. Cotter, Clerk to Council, Boardroom, Workhouse, Cork.
,,	16	Coolyduff—Repairing Cottage, &c.	Rural District Council	J. Cotter, Clerk to Council, Boardroom, Workhouse, Cork.
,,	16	Triggabrowne—Rebuilding Barn	J. B. Fortesque	H. Kendall, Triggabrowne, Lanteglosby, Fowley, Cornwall.
,,	16	Alexandra, Dumbartonshire—Post Office	Commissioners of H.M. Works, &c.	H.M. Office of Works, &c., Edinburgh.
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,,	16	Cleckheaton, Yorks—Four Terrace Houses	—	R. Castle & Son, Architects, London, City and Midland Bank Chambers Cleckheaton, Yorks.
,,	16	Edinburgh—School	School Board	Mr. Carfrac, 3 Queen Street, Edinburgh.
,,	16	Glasgow—Library	Corporation	W. B. Whitie, 196 St. Vincent Street, Glasgow.
,,	16	Heaton, Yorks—Block of Villas	—	Adkin & Hill, Architects, Prudential Buildings, Bradford.
,,	17	Bingley, Yorks—Chapel	—	W. R. Nunns, Architect, Market Street, Bingley.
,,	17	Edinburgh—Refuse Loading Bank	Corporation	Public Works Office, City Chambers, Edinburgh.
,,	17	Hunmanby, Yorks—Church Repairs	—	Vicar, Vicarage, Hunmanby, Yorks.
,,	17	Larbert, Scotland—School	School Board	A. & W. Black, Architects, Falkirk.
,,	17	St. Annes-on-the-Sea—Church Vestry	—	Wright & Son, Surveyors, Lancaster.
,,	17	St. Cyrus, Scotland—Rebuilding Church	—	J. Lyall, Roadside, St. Cyrus.
,,	17	Whitchurch, near Cardiff—Church	—	E. Seward, Architect, Cardiff.
,,	17	Maidstone—Enlargement of Post Office	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, Storey's Gate, S.W.
,,	17	Bodffordd—Alterations, &c., to School	School Board	J. Owen, Architect, Menai Bridge.
,,	17	Preston—Abattoir	Corporation	Borough Surveyor, Town Hall, Preston.
,,	18	Oldtown, Wardhouse—Additions, &c., to School	Kennethmont School Board	J. Duncan & Son, Architects, Turniff.
,,	18	Invergorden—Stores	—	W. G. Paterson, Factor, Invergorden.
,,	18	Shaugh Prior, Devon—House, &c.	School Board	H. J. Snell, 11 The Crescent, Plymouth.
,,	18	Ashburton—Additions to Grammar School	—	R. E. Tucker, Clerk to Governors, Ashburton.
,,	18	Gloucester—Shops and Premises	Co-operative Society, Ltd.	Secretary, Society's Office, Brunswick Road, Gloucester.
,,	18	Smallburgh, Norfolk—Alterations, &c., to Workhouse	Guardians	J. T. Lee, 26 Great James Street, Bedford Row, W.C.
,,	18	Aberbeeg—Twenty Houses	No. 3 Building Club	P. V. Jones, Architect, Hengoed.
,,	18	Broadhempston—Renovation of Church	—	Mr. Johns, Woodbine Villa, Broadhempston.
,,	18	Eccles, Lancs—Destructor Buildings and Plant	Corporation	G. W. Willis, Engineer, Sewage Farm, Peel Green Rd., Patricroft.
,,	20	Fleetwood—Bakery	Industrial Co-op. Soc., Ltd.	T. G. Lumb, Architect, Estate Office, Fleetwood.
,,	20	Bebington, Cheshire—Additions, &c., to Lodge	Burial Board	W. Griffiths, 5 Hamilton Square, Birkenhead.
,,	20	Glasgow—Reconstruction of Shed	Trustees of Clyde Navigation	W. M. Alston, Trustees' Engineer, Glasgow.
,,	20	Grassington, Yorks—Residence	—	Empsall & Clarkson, 7 Exchange, Bradford.
,,	20	Lancaster—Pig Slaughter Houses	Properties Committee	Borough Surveyor, Town Hall, Lancaster.
,,	20	Pontypridd—Bridge Works	Urban District Council	P. R. A. Willoughby, Council's Engineer, Pontypridd.
,,	20	Clydach Vale, Wales—Forty-eight Cottages	Cambrian Collieries, Ltd.	L. W. Llewellyn, Cambrian Collieries, Ltd., Clydach Vale, Wales.
,,	20	Stretford—Additions, &c., to Town Hall	Urban District Council	E. Worral, Surveyor, Council Offices, Old Trafford.
,,	20	Witham, Essex—Engine House	Urban District Council	F. S. Courtney, 25 Victoria Street, Westminster, S.W.
,,	20	Ton, Pentre, Wales—Hall	Workmen's Institute Building Committee.	J. Rees, Architect, Pentre, Wales.
,,	20	East Ham—School Buildings	School Board	R. L. Curtis, 120 London Wall, Moorgate Street, E.C.
,,	21	Victoria Station, Manchester—Foundations	Lancs. & Yorks. Railway Co.	Engineer, Hunt's Bank, Manchester.
,,	21	Tooting, S.W.—Sorting Office	Commissioners of H.M. Works, &c.	J. Wager, H.M. Office of Works, Storey's Gate, S.W.
,,	21	London, S.W.—Coach House, &c.	Commissioners of H.M. Works, &c.	J. B. Westcott, H.M. Office of Works, Storey's Gate, S.W.
,,	21	Buckfastleigh—Pointing, &c., to Church Spire	—	A. Warren, Surveyor, Buckfastleigh.
,,	21	Beverston, near Tetbury—Church	—	Vicar, Vicarage, Beverston, near Titbury.
,,	21	Lancaster—Flooring, &c.	Corporation	Borough Surveyor, Town Hall, Lancaster.
,,	21	Byfleet, Surrey—Rebuilding, &c., Bridges	Rural District Council	W. Durrant, Spinner Hill, Addlestone, Surrey.
,,	21	Mannington, Essex—Alterations, &c., to Wesleyan Schools	—	J. W. Start, Architect, Cups Chambers, Colchester.
,,	21	Mannington, Essex—Alterations, &c., to Sunday Schools	—	J. W. Start, Architect, Cups Chambers, Colchester.
,,	22	Whitehaven—School	—	J. S. Moffat, 53 Church Street, Whitehaven.
,,	22	Ramsgate—Portland Cement	Corporation	Borough Engineer, Albion House, Ramsgate.
,,	22	Lichfield, Staffs—Additions, &c., to Workhouse	Guardians	D. C. Marks, St. Mary's Chambers, Lichfield, Staffs.
,,	22	London, S.W.—Superstructure of Admiralty Buildings	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, Storey's Gate, S.W.
,,	23	Invergorden—Additions, &c., to School	School Board	J. Robertson, Architect, Inverness.
,,	23	Westcliff—Southend-on-Sea—Two Houses	Essex County Council	F. Whitmore, County Architect, Duke Street, Chelmsford.
,,	23	Grays—Alterations, &c., to Police Station	Essex County Council	F. Whitmore, County Architect, Duke Street, Chelmsford.
,,	23	Hounslow—Boiler House, &c.	Urban District Council	H. J. Baker, Clerk, Town Hall, Hounslow.
,,	23	Strood, Kent—Alterations, &c., to Workhouse	Union Guardians	G. E. Bond, Architect, Pier Chambers, Chatham.
,,	24	Merthyr Tydfil—Post Office	Commissioners of H.M. Works &c.	Secretary, H.M. Office of Works, &c., Storey's Gate, S.W.
,,	24	Barrow-in-Furness—Enlargement of Post Office	Commissioners of H.M. Works, &c.	Secretary, H.M. Office of Works, &c., Storey's Gate, S.W.
,,	24	East Swale, near Faversham, Kent—Coastguard Station	Admiralty	Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C.
,,	27	Dartford—Additions, &c., to Workhouse	Guardians	G. H. Tait, Architect, Lowfield Street, Dartford.
,,	27	West Hartlepool—School Buildings, &c.	School Board	J. R. Smith, Clerk, School Board Offices, Park Rd., West Hartlepool.
,,	27	Hendon, N.W.—Repairs, &c., to Asylum	—	W. Lockwood, 36 Gerrard Street, Soho, W.
,,	29	Chipping Ongar—Children's Homes	Hackney Union Guardians	W. A. Finch, 76 Finsbury Pavement, E.C.
,,	30	Devizes—Alterations to Town Hall	Corporation	Borough Surveyor, 15 Market Place, Devizes.
Aug.	4	Watford—Household Management Centre	School Board	W. H. Syme, 4 High Street, Watford.
,,	4	Grayne—Restoration of Church	—	Arnold, Baker & Day, Solicitors, The Precincts, Rochester.
,,	4	Poynings, Hangleton—Additions, &c., to Churches	—	E. H. L. Barker, 146 St. Owen's Street, Hereford.
,,	4	Llanelly—Villa	—	W. Griffith, Falcon Chambers, Llanelly.
,,	4	Shrewsbury—Station Buildings	London & North-Western Rly. Co	Joint Engineer, Woodside Station, Birkenhead.
		ENGINEERING:		
July	16	Barnstaple—Wiring &c.	Corporation	J. Bosson, Town Clerk, Barnstaple.
,,	16	London, E.C.—Railway Material	Gt. Indian Peninsula Rlwy. Co.	Secretary, 48 Copthall Avenue, E.C.
,,	16	Merthyr Tydfil—River Wall, &c.	—	T. F. Harvey, Engineer, Town Hall, Merthyr.
,,	16	Newport, Mon—Electric Light	School Board	Lansdowne & Griggs, Architects, Metropolitan Bank Chambers, Newport.
,,	16	St. Asaph, Flint—Lighting	Guardians	Master of Workhouse, St. Asaph, Flint.
,,	17	Bath—Jet-condensing Plant, &c.	Corporation	Kuiaia, Waller, Manville & Dawson, 29 Great George Street, Westminster.
,,	17	Lowestoft—Timber Revetment, &c.	Corporation	W. T. Douglas, 15 Victoria Street, Westminster, S.W.
,,	17	London, E.C.—Pontoon Landing Stage	Bengal-Nagpur Rlwy. Co., Ltd.	Company's Offices, 132 Gresham House, E.C.
,,	17	Sheffield—Heating Apparatus and Two Boilers	Education Committee	J. F. Moss, Secretary, Education Office, Leopold Street, Sheffield.
,,	18	Brigg, Lincs—River Cleansing	Ancholme Drainage, &c., Commissioners.	A. Atkinson, Engineer to Commissioners, Brigg.
,,	18	Edinburgh—Dust Screen	Magistrates and Council	Burgh Engineer, 1 Parliament Square, Edinburgh.
,,	19	Weymouth—Electric Lighting Plant	Corporation	Sir R. N. Howard, Town Clerk, Municipal Offices, Weymouth.
,,	20	Pollenza—Lighthouse Building	—	Ministry of Agriculture, Industry and Public Works, Madrid.
,,	20	Manchester—Laying Underground Telephone Pipes	Paving, Surveying and Highways Committee.	City Surveyor, Town Hall, Manchester.
,,	20	Knaresborough—Waterworks	Rural District Council	R. Annakin, 11 Dragon Terrace, Harrogate.
,,	20	Stalybridge—Tanks, &c.	—	F. Schofield, Clerk, Town Hall, Stalybridge.
,,	20	Coniston—Driving Level	—	Secretary, Mandalls Slate Co., Ltd. Coniston.
,,	21	London, S.W.—Excavating and Levelling Site, &c.	London County Council	Architect's Department (Highways), 13 Charing Cross Road, S.W.
,,	21	Horwich, Lancs—Sluice Valves, Hydrants	Urban District Council	Surveyor, Council Offices, Horwich
,,	21	London, E.—Pipework, &c	Stepney Borough Council	A. Wright, 27 Osborn Street, Whitechapel.
,,	21	Mountain Ash, Wales—Laying Gas-mains	Urban District Council	J. Williams, Town Hall, Mountain Ash
,,	22	North and South Shields—Landing Stages	Tyne Improvements Commissioners.	R. Unwin, Commissioners' Offices, Bewick St., Newcastle-on-Tyne.
,,	22	Preston—Plant	Corporation	W. H. Littenson, 25 Burrow Road, Preston.
,,	23	Hounslow—Electric Lighting Plant, &c.	Urban District Council	J. & J. S. Enright, 47 Victoria Street, S.W.
,,	23	Aldeburgh, Suffolk—Well	Corporation	J. C. Gordon, Borough Surveyor, Aldeburgh.
,,	25	Liverpool—Protective Mantle on River Bank	—	R. P. Allenby, 16 Cook Street, Liverpool.
,,	29	Pietermaritzburg—Six Electric Tramcars	Corporation	Mordey & Dawbarn, 82 Victoria Street, S.W.
,,	29	Burnley—Cistern	Guardians	G. Edmondson, 18 Nicholas Street, Burnley.

Complete List of Contracts Open *continued*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	IRON AND STEEL:		
July 16	Plympton, Devon—Tubing, &c.	Plympton St. Mary R.D.C.	M. W. Wicket, 1 Bovingdon Terrace Plympton.
„ 18	Burnley—Pipes	Urban District Council	S. Edmondson, 18 Nicholas Street, Burnley.
„ 21	London, E.C.—Railway Stores	Bombay, Baroda and Central India Railway Company	T. W. Wood Secretary, Gloucester House, Bishopsgate Street Without, London.
„ 21	Horwich, Lancs—Materials	Urban District Council	Surveyor, Council Offices, Horwich.
„ 22	Madrid—Telegraph Wire	State Telegraphs	Chief, Telegraph Section, Directorate-General of Posts and Telegraphs, Carretas 10, Madrid.
	PAINTING AND PLUMBING:		
July 16	Cardiff—Painting School	School Board	J. J. Jackson, Clerk. School Bd. Offices Howard Gardens, Cardiff.
„ 17	Sheffield—Painting, Distempering and Asphalting	Corporation	J. F. Moss, Secretary, Education Committee, Leopold St., Sheffield.
„ 17	Preston—Painting	Corporation	Borough Surveyor, Town Hall, Preston.
„ 18	Manchester—Painting, &c., Lavatories	Sanitary Committee	City Surveyor, Town Hall, Manchester.
„ 20	Pontypridd—Painting Hospital	Urban District Council	P. R. A. Willoughby, Engineer. Council Offices, Pontypridd.
„ 21	Pudsey, Yorks—Painting, &c., Church	——	Rev. J. L. Saywell, St. Paul's Church, Pudsey, Yorks.
„ 21	Horwich, Lancs—Lead Piping	Urban District Council	Surveyor, Council's Offices, Horwich.
„ 22	Mirfield, Yorks—Painting Hospital	Joint Hospital Board	E. Gill, Surveyor, Town Hall, Mirfield.
„ 22	Norwood—Painting, &c., Schools	Lambeth Guardians	W. Thurnall, Clerk, Guardians' Offices, Brook Street, Kennington Road, S.E.
„ 24	Northwich—Colourwashing, &c., Schools	——	A. E. Thomas, 174 London Road, Northwich.
„ 27	Whittingham, near Preston, Lancs—Painting Asylum	——	Master of Asylum, Whittingham, Preston, Lancs.
„ 27	Newcastle-on-Tyne—Painting, &c., Hall	Parks Committee	Building Inspection Office, Town Hall, Newcastle-on-Tyne.
„ 27	Hendon, N.W.—Painting, &c., Asylum	——	W. Lockwood, 36 Gerrard Street Soho, W.
	ROADS AND CARTAGE:		
July 16	Ramsbottom, Lancs—Street Works	Urban District Council	T. H. Bell, Surveyor, Council Offices, Ramsbottom, Lancs.
„ 17	Woodford, Essex—Tar Paving	Urban District Council	W. Farrington, Surveyor, Council Offices, Woodford Green.
„ 17	Woodford, Essex—Steam Rolling, &c.	Urban District Council	W. Farrington, Surveyor, Council Offices, Woodford Green.
„ 17	Woodford, Essex—Granite	Urban District Council	W. Farrington, Surveyor, Council Offices Woodford Green.
„ 17	Pentre, Glamorgan—30 Carts	Urban District Council	W. J. Jones, Engineer, Council Offices, Pentre, Glam.
„ 17	Preston—Paving, &c.	Corporation	Borough Surveyor, Town Hall, Preston.
„ 18	Stamford—Granite	Town Council	T. W. A. Hayward. 8 St. Mary's Street, Stamford.
„ 20	Clydach Vale, Wales—Roads, &c.	Cambrian Collieries, Ltd.	L. W. Llewellyn, Cambrian Collieries, Ltd, Clydach Vale, Wales.
„ 20	Goole, Yorks—Street Works	Urban District Council	C. O. Baines, Town Surveyor, Council Offices, Goole.
„ 20	Risca, Mon.—Limestone	Urban District Council	J. Williams, Surveyor, Council Offices, Risca, Mon.
„ 20	Dewsbury—Granite Setts	Corporation	Borough Surveyor, Town Hall. Dewsbury.
„ 21	Wembley—Kerbing &c.	Urban District Council	W. Bagshaw, Clerk, Public Offices, Wembley.
„ 21	London, E.C.—Wood Paving	Streets Committee	City Engineer, Public Health Department, Guildhall, E.C.
„ 21	Horwich, Lancs—Kerbs, Flags, Macadam, &c.	Urban District Council	Surveyor, Council Offices, Horwich.
„ 22	Ramsgate Granite Kerb and Setts	Town Council	T. G. Taylor, Borough Engineer, Albion House, Ramsgate.
	SANITARY:		
July 16	London, W.—Stoneware Pipes, Cement	Ealing Town Council	A. E. Lewis, Manager, Electricity Department, Town Hall, Ealing.
„ 16	Lingfield Surrey—Sewerage, &c., Works	Godstone R.D.C.	A. Williams & Son, 14 Victoria Street, Westminster, S.W.
„ 17	Kendal—Sewerage Works	Corporation	R. H. Clucas, Borough Engineer, Town Hall, Kendal.
„ 17	Oldbury—Sewers, &c.	Urban District Council	J. T. Eayrs, 39 Corporation Street, Birmingham.
„ 18	Oadby, Leics—Sewer, &c.	Blaby R.D.C.	Draper & Walters, Surveyors Friar Lane, Leicester.
„ 20	Bromsgrove—Sewerage Works	Rural District Council	W. Fiddian, Engineer, Old Bank Chambers, Stourbridge.
„ 20	Reigate—Bacteria Sewage-Disposal Works	Town Council	F. T. Clayton, Borough Engineer, Municipal Buildings, Reigate.
„ 20	Manchester—Sewers	Paving, Sewering and Highways Committee.	City Surveyor, Town Hall, Manchester.
„ 21	Horwich, Lancs—Stoneware, Disinfectants, &c.	Urban District Council	Surveyor, Council Offices, Horwich, Lancs.
„ 21	London, E.C.—Sewer Work	Streets Committee	City Engineer, Public Health Department, Guildhall, E.C.
	TIMBER:		
July 16	London, S.W.—Firewood	Union Guardians	E. J. Mott, 75 Fulham Palace Road, W.
„ 21	Horwich—Creosote Oil	Urban District Council	Surveyor, Council Offices, Horwich.
„ 22	Isleworth—Firewood	Guardians	W. Stephens, Clerk, Union Offices, Isleworth, W.
„ 21	London, N.—Firewood	Guardians	F. Shelton, Clerk, The Grange, White Hart Lane, Tottenham
„ 29	Cape Town—Sleepers	Railway Department	Railway Stores, Cape Town, Port Elizabeth.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
July 20	Taunton—Library	£30, £20, £10.	10s. 6d.	G. H. Kite. Town Clerk, Municipal Buildings, Taunton.
Sept. 12	Stonehaven, Scotland—Alterations and Additions to Town Hall.	——	——	G. Murdoch, Borough Surveyor, Stonehaven.
1904. Mar. 31	Vienna—Machinery to Lift Boats on Canal	100,000, 75,000 and 50,000 kronen.	——	Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C.
No date	Cloverhill, Ayr—Hospital	——	£1.	D. W. Shaw, 5 Wellington Square, Ayr.

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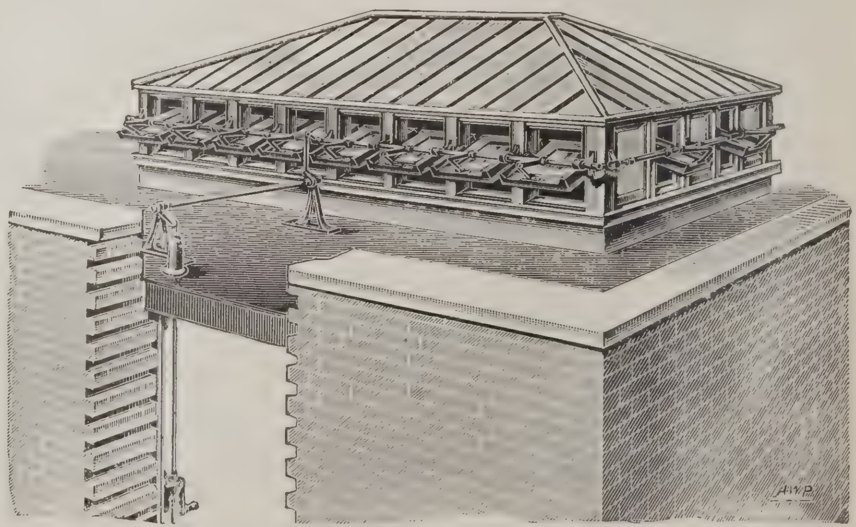

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NOTE.—Advertisements for this page must reach the Office not later than 5 o'clock p.m. on Monday.

Current Market Prices

FORAGE.

		£	s.	d	£	s	d.
Beans	per qr	1	9	6	1	11	9
Clover, best	per load	4	7	6	4	15	0
Hay, best	do	3	15	0	4	10	0
Sanfoin mixture ..	do	3	15	0	4	5	0
Straw	do	1	8	0	2	0	0

OILS AND PAINTS.

		£	s.	d	£	s	d.
Castor Oil, French ..	pet cwt.	1	1	10	1	2	2
Colza Oil, English ..	do.	1	2	6		—	
Copperas	per ton	2	2	6		—	
Lard Oil	per cwt.	2	15	0	2	17	0
Lead white. ground, carbonate	do.	1	4	10		—	
Do red . ..	do	1	0	4½			
Linseed Oil, barrels ..	do	1	1	9			
Petroleum American ..	per gal	0	0	5⅞	0	0	6
Do Russian ..	do	0	0	4½	0	0	4⅝
Pitch	per barrel	0	7	6		—	
Shellac orange	per cwt.	6	19	6		—	
Soda, crystals	per ton	3	2	6	3	5	0
Tallow Town	per cwt	1	16	9	1	7	0
Tar, Stockholm	per barrel	1	1	6		—	
Turpentine	per cwt.	1	19	3	1	19	6

METALS.

		£	s.	d	£	s	d.
Copper, sheet strong ..	per ton	71	0	0		—	
Iron Staffs., bar.. ..	do	6	5	0	8	10	0
Do Galvanised Corrugated sheet ..	do.	11	5	0	11	10	0
Lead, pig, Soft Foreign..	do.	11	3	9	11	5	0
Do. do. English common brands.. ..	do.	11	10	0	11	12	6
Do. sheet English 3lb. per sq. ft and upwards ..	do.	14	0	0		—	
Do. pipe	do.	15	0	0		—	
Nails,cut clasp,3in to 6in.	do.	9	5	0		—	
Do. floor brads ..	do.	9	0	0		—	
Steel, Staffs., Girders and Angles	do.	5	10	0	6	7	6
Do do. Mild bars ..	do.	6	7	6	7	2	6
Tin, Foreign	do.	123	10	0	124	0	0
Do. English ingots ..	do.	125	0	0		—	
Zinc, sheets. Silesian ..	do.	26	0	0		-	
Do. do. Vielle Montaigne	do.	26	5	0		—	
Do Spelter	do.	20	15	0	21	2	6

TIMBER.

Soft Woods.

		£	s.	d	£	s	d.
Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow ..	do.	5	5	0	6	5	0
Do. Pitch	do.	2	12	0	3	3	0
Laths log, Dantzic ..	per fath.	4	10	0	5	10	0
Do. Petersburg ..	do.	7	5	0		--	
Deals, Kovda, 3rd Yell. 3×9	per load	13	15	0		—	
Do. Petersburg, 1st White 3×11	do.	13	5	0		—	
Do. Skelleftea, Yell., 5th, 3×9	do.	6	10	0		—	
Do. do. do. 4×9	do.	6	15	0		—	
Do. do. do. 3×11	do.	6	7	6		—	
Do. Husum, Yellow, inferior, 5th, 4×9	do.	6	5	0		—	
Do. do. do. do. 3×7	do.	6	2	6		—	
Do. Lulea, Yell , 3rd, 3×8	do.	7	10	0		—	
Do. Galatz, White, 1st, 2½×11	do.	10	0	0		—	
Do. Libau, Unsorted White, 3×9	do.	8	5	0		—	
Do. Kotka, unsorted Yell., 4×12	do.	2	0	0		—	
Do. Mesane, White, 3rd. 3×9	do	9	10	0		—	
Do. Ornsköldsvik, Yell. 2½×7	do.	4	15	0		—	
Do. do. White, 2½×7	do.	4	15	0		—	
Do. Archangel, Yell. 3rd. 3×9	do.	13	5	0		—	
Do. Hudiksvall, Yellow, 5th. 2½×7	do.	10	5	0		—	
Do. Galaz, Unsorted White, 3×11	do.	88	10	0		—	
Do. Halifax, Unsorted Hemlock Spruce, 4×9	do.	7	0	0		—	

Coming Events.

Wednesday, July 15.

ROYAL INSTITUTE OF PUBLIC HEALTH.—Congress at University College, Liverpool (six days).

INSTITUTE OF SANITARY ENGINEERS, LTD.—Annual Provincial Summer Meeting. (2nd day.) "The Cold Storage," by George Green, at 10.30 a m "Lorain System of Electric Traction," by H. Vickers, at 11 45 a.m. Visit to the Tram Depot and Electric Generating Station, and Inspection of new Ice Factory, and Cold Storage Installation and new Wholesale Market at 2.15 p.m.

CENTRAL SCHOOL OF ARTS AND CRAFTS.—Anuual Exhibition. Open till the 18th from 10 a m. to 8 p.m.

BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.—Half-yearly Meeting of the Members at 8 p.m.

BUILDERS' BENEVOLENT INSTITUTION.—Annual General Meeting, 3 p.m., Committee Meeting at 7.30 p.m.

Thursday, July 16.

INSTITUTE OF SANITARY ENGINEERS, LTD —Annual Provincial Summer Meeting concluded. "The Distribution of Sewage on Bacteria Beds" by J. C. Thersh. at 10 a.m. Visit to Sewage Works. Luncheon. Visit to Staffordshire Steel Works, at 2.30 p.m

LONDON MASTER BUILDERS' ASSOCIATION.—Council at 4 p.m.

Monday, July 20, to Saturday, 25.

ARCHITECTURAL ASSOCIATION.—Annual Excursion to Worcester and District.

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

DURING THE WEEK ending July 11th thirteen failures in the building and timber trades in England and Wales were gazetted.

J. KING, contractor, Kilburn. R.O. July 1st.

C. H. JACOBSEN, builder, Enfield. Adj. June 27th.

SNEAP & GITTINGS, builders, Stapleford. Adj. July 4th.

G. W. RAINER, builder, Broughton Astley. R.O. July 4th.

G. & J. AMBROSE, builders, contractors and naturalists, Colchester. R.O. July 3rd.

WILLIAM DAWBARN & Co., builders' merchants, Bootle and Liverpool. R.O. July 1st.

W. B. JOSLIN. builder, Hull. First meeting, O R's, Hull, July 15th, at 11. P.E., Hull C C., July 20th at 2.

D. ELLIS, builder and contractor, Llandudno. R.O. June 30th.

R. FRANCIS, builder, Gilfach Goch. R.O. and adj. July 3rd.

D. MORGAN, builder and contractor, Swansea. R.O. and adj. July 4th.

E. G. BREND, painter and decorator, Llanishen. Liabilities £416; assets £33.

J. A. HARRIS, builder, Ashley Down. Unsecured liabilities £1,290; assets £408.

W. STOKES, builder and contractor, Reading. R.O., June 29th.

C. HARRIS, builder, St. Kilda, Sandhurst. Liabilities £2,000.

G. HARVEY, hardware, oil and china dealer, Bedford. First meeting, O.R's, Northampton, July 13th, at 12.30. P.E., Bedford Shirehall, July 21st, at 11.

H. J. WILLIAMS, house decorator. Newport. Liabilities estimated at £97; assets £3; deficiency £94. He commenced business without any capital.

J. MOLYNEAUX, builder. St. Helens. First meeting, O.R.'s, Liverpool, July 15th, at 12. P.E., Liverpool C.C., July 16th, at 11.30

B. F. HOLMAN, plumber and painter, Carlton Colville. Gross liabilities £245. of which £230 are expected to rank. Assets estimated at £135; deficiency £110.

R. HEDLEY, joiner, Stamfordham. R.O. June 30th. First meeting. O.R.'s, Newcastle-on-Tyne, July 15th, at 11.30. P E., Newcastle-on-Tyne C.C., July 23rd, at 11.

S. TUCKER, builder, Plymouth. Gross liabilities £7,16), of which £504 are unsecured. Assets £95; deficiency £436 13s.

A. T. KEY, carpenter and joiner, Nottingham. First meeting, O.R's Nottingham, July 17th, at 12.30. P.E., Nottingham C.C., August 7th, at 12.30.

W. J. HADFIELD, joiner, Putney. First meeting, 24, Railway Approach, London Bridge, S.E., July 14th, at 11.30. P.E., Wandsworth C.C., July 23rd, at 12. Adj. July 2nd.

J. MATTHEWS, builder and contractor, Aberkenfig. R O. and adj. June 29th. First meeting, 117, St Mary Street, Cardiff, July 13th, at 11.30. P.E., Cardiff Town Hall, August 4th, at 11.

C. E. G DAY, builder and contractor, Cowden. First meeting, 24, Railway Approach, London Bridge, S.E., July 14th, at 12 P.E., Tunbridge Wells Town Hall, August 6th, at 2.30.

S. HORSEY, builder and contractor, New Brompton. Gross liabilities £6,103, of which £5,400 are fully secured. Amount expected to rank for dividend £703. Assets £80. P.E. adjourned.

MRS. C. PORTER brickmaker and building estate proprietress. Norwich. Gross liabilities £49,047, of which £1,965 are expected to rank. Assets estimated at £7,002; surplus £4,916

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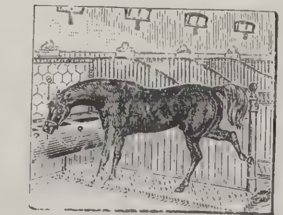

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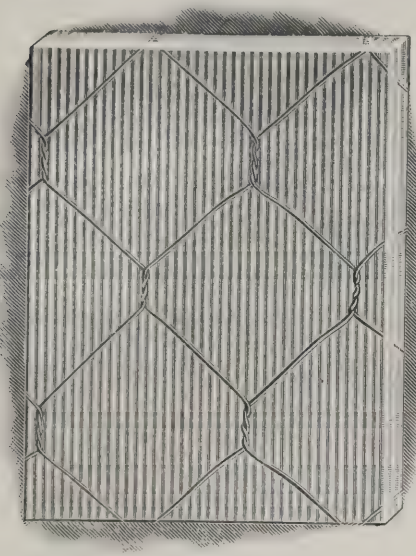

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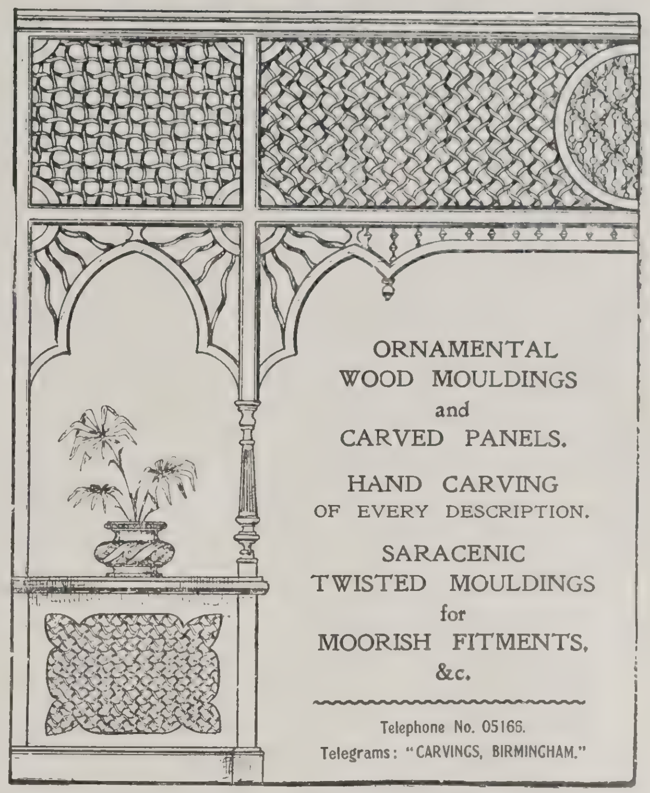

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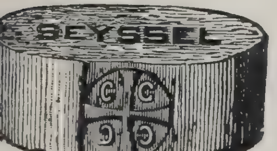

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Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

Brighton.—For the erection and completion of a pumping station, comprising engine-room, boiler-house coal store, workshop, and offices, and the building of a chimney shaft and flues, together with sundry works connected therewith, in the parish of Falmer, Sussex, for the Brighton Town Council:—

W. A. Field & Co., Brighton	£14.419
R. Cook & Sons, Crawley	12,876
J. Longley & Co., Crawley	12,489
Rowland Brothers, Horsham	11,989
Kirk & Randall,* Woolwich	10,933

* Accepted.

Kettering.—For making and completing certain streets on the Headlands and London Road building estate, Kettering, to the satisfaction of the Urban Council, for the Kettering Real Estate Co. Messrs. Gotch & Saunders, surveyors, Kettering:—

F. Barlow, Rothwell	£2,619
W. G. Wilmott, Rushden	2,543
Lewin & Son,* Kettering	2,496
Goodman & Murkett, Wellingborough	2,490

* Accepted.

Muckamore (co. Antrim).—For the erection of a dwelling-house, shop, and out-offices at Muckamore, co. Antrim. Mr. F. W. Lockwood, F.I.S.E., architect Belfast:—

Kidd, Belfast	£1,386	0
Armstrong, Antrim	1,350	0
McClughin, Larne	1,310	0
Kerr, Belfast	1,249	15
McCann, Ballymena	1,220	0
Frew, Antrim	1,200	0
Barton, Randalstown	1,150	0

New Brompton (Kent).—For the erection of shop, stores, &c., Byron Road, New Brompton, for the New Brompton and District Co-operative Society. Messrs. J. W. Nash & Son, architects, Rochester:—

E. West, Stroud	£2,099
H. Harris, New Brompton	2,052
J. Dawson, West Malling	1,891
H. E. Phillips, New Brompton	1,850
E. Filley, Chatham	1,717
J. L. Trueman, Chatham	£1.659
J. Leonard, Rochester	1,630
W. C. Snow, New Brompton	1,629
West Brothers, Rochester	1,599
F. Luff, Chatham	1,595
G. Gates, Frindsbury	1,590
G. E. Woollard,* New Brompton	1,589

* Accepted.

Pontefract.—For the ferry bridge drainage and sewage-disposal works, for the Pontefract Rural District Council. Mr. John Waugh, C.E., engineer, Sunbridge Chambers, Bradford:—

Wilson & Sons, Mirfield	£8,282
Coupland & Co., London	6,731
Sugden, Keithley	5,999
Rhodes & Crabtree, Sheffield	5 965
Sutcliff, Sowerby Bridge	5, 85
Ward & Tetley, Bradford	5,750
Clements & Rothera, Keighley	5,501
Dickinson, Leeds	5,467
Ives & Co.,* Gomersal	5,400

* Accepted.

Whitchurch (near Cardiff).—For the superstructure of new asylum to be erected at Whitchurch, for the Cardiff Asylums Committee:—

W. Thomas & Co.	£275,297	19	5
Stephens, Bastow & Co., Bristol	264.997	0	3
Lloyd Brothers, Swansea	263,376	0	0
Turner & Sons	244,222	0	0
M'Cormick & Sons, London	242,787	0	0
J. Allan	238,516	18	11
D. W. Davis	237,750	0	0
W. Williams	233.990	0	0
H. Wilcock & Co., Wolverhampton	233,028	0	0
W. King & Sons,* Westminster	232.390	0	0

* Recommended for acceptance.

[Rest of Cardiff.]

Withypool, Dulverton, Somerset.—For the erection of a house and stables, for Miss Darbyshire. Mr. Allen T. Hussell, A.R.I.B.A., architect, Ilfracombe:—

Sanders, South Moulton	£1,760
Fewings, Tiverton	1.657
Steer,* Winsford, Dulverton	1,648

* Accepted.

York Town (Camberley, Surrey).—For the erection of 12 cottages, Alexandra Avenue, York Town. Mr. W. J. Hodgson, C.E., architect, Vectis, Camberley:—

F. Chinchen, Bagshot	£3,200
W. W. Gale, Woking	2,994
J. Knight,* The Avenue, Camberley	2,580
G. Taylor,† Camberley	2,565

* Accepted. † Too late.

Wisbech.—Improvements at the Union Workhouse. Mr. F. Burdett Ward, architect, 7, York Row, Wisbech (and Spalding). Quantities by the architect:—

	Section I. Alterations to Old as per Schedule of Prices.	Section II. New Sanitary Annexes.		Section III. Re-drainage.	
		A. Building.	B. Plumbing.		
F. W. Currington, Wisbech	—	—	£458 10 0	—	—
E. R. Lankfer, Wisbech	—	—	419 19 0	..	—
R. Dye, King's Lynn	15 per cent. above	£1,432 0 0	507 0 0	£251 0 0	£2,650 0 0
J. Guttridge, Peterborough	"At par."	1,490 17 4	402 18 10	285 16 6	2,579 12 8
R. Shanks, Chatteris	10 per cent. above	1.421 0 0	440 0 0	236 10 0	2,537 10 0
J. S. Johnson, Tilney	7½ per cent. above	1,275 0 0	515 14 0	305 1 0	2,525 15 0
G. J. West, Wisbech	20 per cent. above	1,343 13 6	424 15 0	273 16 0	2,522 4 6
Elworthy & Co., Upwell	2½ per cent. below	1,209 0 0	470 15 0	258 10 0	2,328 5 0
E. Girling & Co., Wisbech	6 per cent. below	1,236 0 0	441 4 0	263 0 0	2,316 4 0
J. W. Wilkinson,* Elm	"At par."	1,150 0 0	459 10 0	208 1 0	2,217 11 0

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* Accepted.

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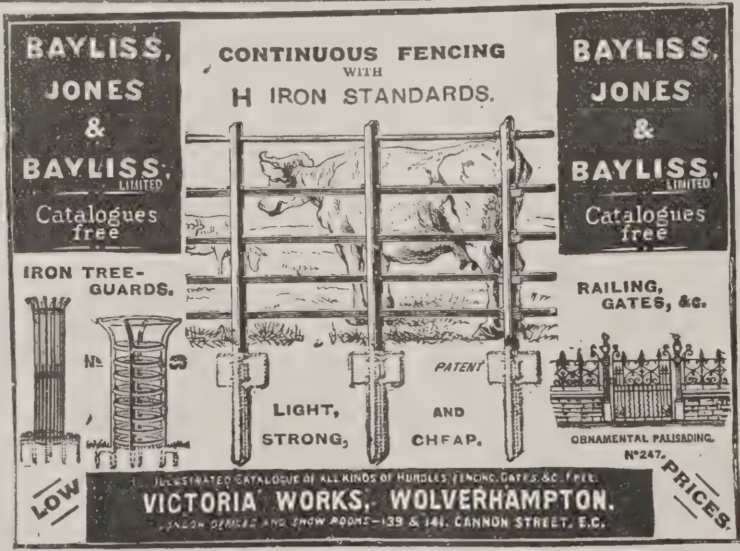
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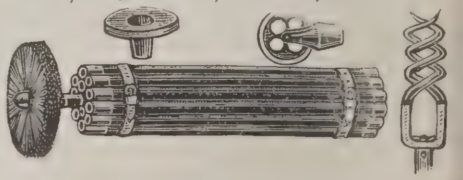

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AND ARCHITECTURAL RECORD.

July 22, 1903. Vol. 17, No. 441. 9, East Harding Street, E.C.

A London Case of Vandalism. A SCANDALOUS state of things is existing at present in regard to the Westminster Improvement Scheme, due chiefly to the Ecclesiastical Commissioners, who are of course notorious for mismanagement, but also to the connivance of the London County Council. It is proposed by the Ecclesiastical Commissioners to demolish the delightful old residential quarter immediately south of Westminster Abbey (which has a wealth of historical and archæological associations), and to sell the sites to speculators and business firms for the erection of commercial offices. The surroundings of Westminster Abbey have already been enough degraded by obtrusive office buildings. Vigorous protests by residents, members of Parliament, antiquarian societies and eminent artists are being made against the action of the Ecclesiastical Commissioners, and it is to be hoped that Parliament will take steps to save London from the destruction of one more of the quiet and beautiful old-world corners of the metropolis and a breathing-space from the roaring streets. One would have thought the Ecclesiastical Commissioners, of all bodies, would have had regard for old associations and for art. Though the body has a large number of members, very few ever attend its meetings, and the officials are left to do as they please. These officials grossly mismanage their trust. The Commissioners possess plenty of inferior property which they might very well demolish before they even consider the advisability of touching such streets as Great College, Barton, Cowley and North Streets, and Smith Square, all consisting of fine old Georgian work, with beautiful canopied doorways and ironwork, and good interior woodwork. The Commissioners have a reputation for being grasping ground landlords, and in their present action have acted most harshly towards their tenants.

In 1897–8, it will be remembered, a private syndicate endeavoured to get a Bill through Parliament to extend the Embankment to Lambeth Bridge, to acquire the property south of the Abbey, and erect thereon large blocks of offices and flats. So great an outcry was raised against this by the tenants of the Ecclesiastical Commissioners, the London County Council and others, that the House of Commons rejected the Bill. Sir Alfred de Bock Porter, secretary to the Ecclesiastical Commissioners, on their behalf congratulated the tenants, when they presented a memorial praying for the preservation and permanent peaceable possession of their houses, on the rejection of the Bill, and promised not to tamper with the properties and to renew their leases. In 1900 the London County Council promoted a Bill which among other improvements proposed to carry out the improvement to the embankment. This Act, which received royal assent on August 6th, 1900, contained clauses which gave the L.C.C. power to take any lands they might require for the purposes of the improvements. They were prevented, however, by strong opposition of residents from tampering with Abingdon Street except at the northernmost end, which they propose to round off. Only a small area at the end of Great College Street was required for the improvement, yet in April, 1901, the tenants of the whole of the area bounded by Little College Street, Great College Street and Wood Street were given notices to treat. This must have been done with the approval of the Ecclesiastical Commissioners' officials, for though the Commissioners individually did not know it a secret agreement had been made under seal with the Council that the latter should not take any property without the former's expressed consent. Most of the property was held on twenty-one years' leases determinable at seven, fourteen and twenty-one years, and many of the tenants had spent large sums on alterations, &c., on the strength of the assurance that the Commissioners would let the leases run the full term. The Council, however, only offered compensation for the years yet to run to complete any of the three divisions of the lease, and thus many of the tenants lost considerably. The Council in their usual way put the tenants to every annoyance with the object of getting them to leave or to depreciate the value of the property, and they even evicted tenants before juries were summoned to settle compensation, as they had no right to do (there were several cases of severe hardship). They finally gained possession about August, 1902. The houses were pulled down on the orders of Messrs. Clutton, the agents of the Commissioners, and immediately after the Commissioners began to get out the foundations on the site for their new offices, which are now being erected. This means that the Council have done the Commissioners' dirty work, broken the leases for them and acquired the properties at the cost of individuals. This, we presume, the Commissioners' officials consider honourable. Perhaps the Secretary (who we are surprised to learn is a Dissenter) thinks such action befits the Church of England. And what are the London County Council to get as their *quid pro quo?* Are the Council thinking of erecting their own offices in this locality?

The Commissioners have followed up this action by leasing to a railway company a house (No. 1) in the Abbey Garden which was built for a canonry, and as it is within the precincts of the Abbey this must have had the approval of the Dean and Chapter. This step should be retracted at once, for if it goes on we may expect St. Dunstan's wall in Great College Street to be pulled down and the Abbey Garden built upon. The Commissioners have allowed an ugly block of offices to be erected in Little College Street, and an equally pretentious and ill-proportioned building is now being erected by their side for the Lancashire and Yorkshire Railway Company. Nos. 14 and 15, Great College Street, and 4 and 5, Cowley Street, which back on them, have been leased to the North Eastern Railway Co., who probably propose to pull them down and erect further pretentious offices out of character with the neighbourhood. We beg the company, if they cannot see their way to abandoning these premises, to only alter their internal arrangements, and leave the old fronts standing. The buildings at the west end of Great College Street in Tufton Street have been pulled down, and the site leased to a speculative architect. The other half of the corner, in Barton Street, is now being demolished, and it is stated that premises are to be erected on it in which to provide additional rooms for the Westminster School.

On no consideration should the remaining houses in Great College, Barton and Cowley Streets be demolished. The houses on the north side of Smith Square, facing St. John's Church, ought also to be preserved; at any rate, the corners if rounded off as proposed would look most ugly. There is no reason either why the old houses in North Street should be pulled down. The late Dr. Temple, Archbishop of Canterbury, said it would be utterly wrong and indefensible for this neighbourhood of substantial and well-built houses to be altered for any purpose. Members are constantly lamenting the want of residences close to the Houses of Parliament, and yet these are being destroyed. Mr. Owen Fleming in a paper read before the American Institute of Architects at Washington, and reported in the Journal of the Royal Institute of British Architects for June 27th, referred to the "old rookeries and slums which now obstruct and confuse the southern view of Barry's masterpiece." This is a very ambiguous statement, and might be taken to refer to the whole of the quarter affected instead of the buildings along the east side of Millbank Street, as he no doubt meant. In any case, the statement that the houses in the locality are rookeries or slums is a gross libel.

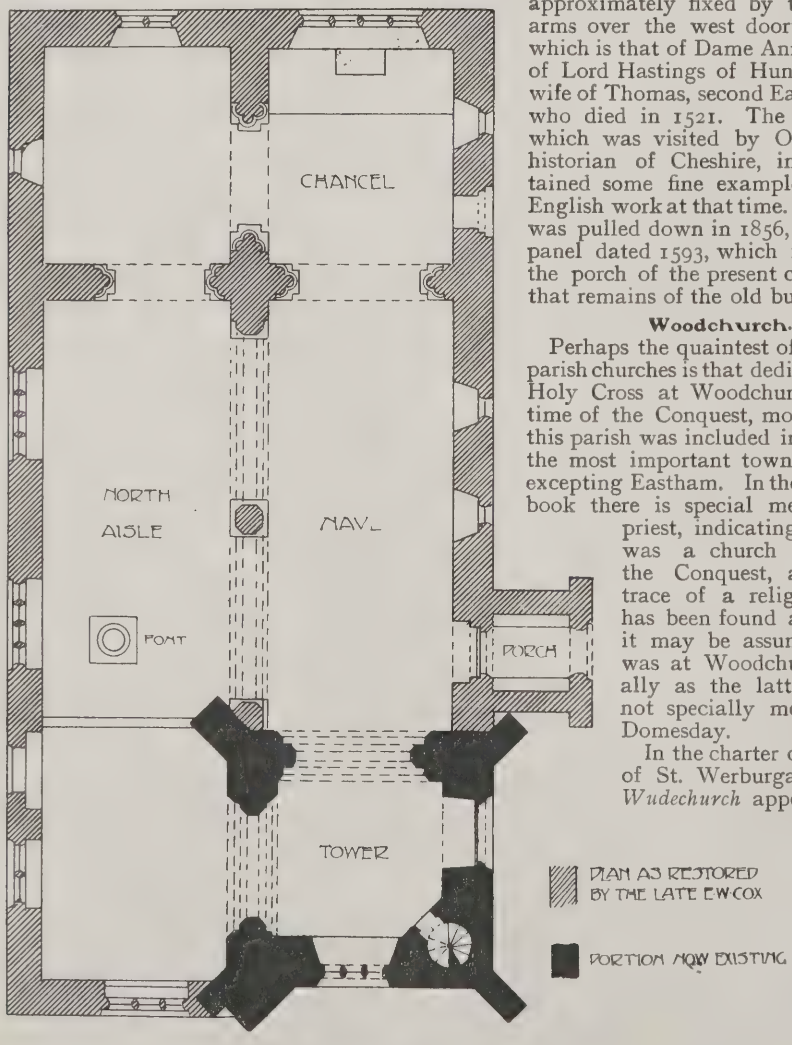
ANCIENT CHURCHES OF WIRRAL.*

By LAURENCE HOBSON, A.R.I.B.A.

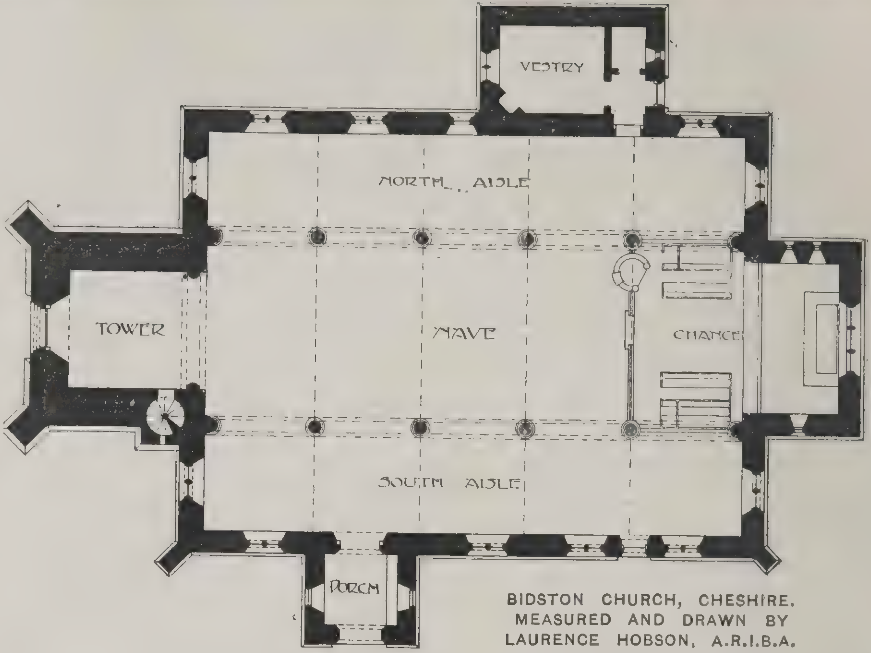
THE Hundred of Wirral is a division of the county of Cheshire which lies between the rivers Mersey and Dee, bounded on the north by the Irish Sea and on the south by the adjoining Hundred of Broxton. Architecturally speaking, the Cheshire churches cannot compare with those of Lincolnshire, Northamptonshire and other counties; but what they lack in architectural grandeur is compensated for, to a great extent, by their quaintness and their archæological and historical interest. Space will not allow of a full and detailed description of each church, and I will therefore confine myself to putting before the reader such facts as appear to me to be the most interesting.

Wallasey.

Of Wallasey Church nothing now remains but the tower, built in the year 1530. The most recent church was burnt down on February 1st, 1857. The old structure was a very plain one with no redeeming features, and was erected about the year 1760 on the site of an earlier church. This earlier building was added to at various times in past ages, the nucleus being the original Norman church, which possibly dated from the reign of Henry I. or Stephen, and was most probably co-eval with the Norman font which, after a very chequered career, is still in existence. When the last erection of 1760 was destroyed, a number of fragments and carved stones of the earlier church were found built into the walls. These the late Mr. E. W. Cox sketched and measured and, with the aid of various old documents, was enabled to restore the plan of the earlier church, which is fully described in a paper given before the Historic Society of Lancashire and Cheshire.



ST. HILLARY'S CHURCH, WALLASEY.



BIDSTON CHURCH, CHESHIRE. MEASURED AND DRAWN BY LAURENCE HOBSON, A.R.I.B.A.

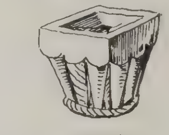
Bidston.

At St. Oswald's, Bidston, the tower, as at Wallasey, is all that is left of the original fabric, the church being quite modern, though following the lines of its predecessor. The tower was built about 1520, the date being approximately fixed by the coats-of-arms over the west doorway, one of which is that of Dame Anne, daughter of Lord Hastings of Hungerford, and wife of Thomas, second Earl of Derby, who died in 1521. The old church, which was visited by Ormerod, the historian of Cheshire, in 1812, contained some fine examples of Early English work at that time. The fabric was pulled down in 1856, and a stone panel dated 1593, which is built into the porch of the present church, is all that remains of the old building.

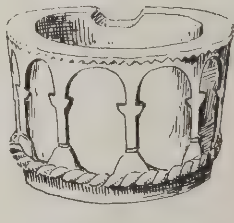
Woodchurch.

Perhaps the quaintest of all the old parish churches is that dedicated to the Holy Cross at Woodchurch. At the time of the Conquest, most probably this parish was included in Landican, the most important town in Wirral, excepting Eastham. In the Domesday book there is special mention of a priest, indicating that there was a church here before the Conquest, and as no trace of a religious house has been found at Landican it may be assumed that it was at Woodchurch, especially as the latter place is not specially mentioned in Domesday.

In the charter of the abbey of St. Werburga the name *Wudechurch* appears as early as 1093, and this would practically confirm the existence of a wooden church on the site of the present one. The building as it now stands consists of a nave, south aisle, chancel and tower, the last being chiefly remarkable for the enormous buttresses which support the angles. The body of the church is of the Decorated period (about the end of the fourteenth century), while the south aisle and porch were added in 1584. The north wall of the nave and chancel forms part of the Norman church, the Perpendicular windows having been inserted. The only Norman window left is a small one on the north side of the chancel. An open-timber roof of plain design was uncovered during a partial restoration in 1844, having been hidden previously by a low ceiling. The tower dates from the fourteenth century, with a later casing, and the buttresses appear to have been added in 1675, as shown by a panel bearing that date. There is an open screen between the nave and chancel, and the ends of the choir stalls are finely carved; they appear to be of the Perpendicular period or possibly late Decorated.



PISCINA



NORMAN FONT

FROM ST. HILLARY'S CHURCH, WALLASEY.

West Kirby.

At West Kirby an important church certainly existed as far back as Saxon times, and was connected with a small Benedictine monastery on the adjacent island of Hilbre. During the restoration of the church in 1870 many sculptured crosses and other stones of the greatest antiquity were found built into the walls, and are now preserved in a museum adjoining the church. The foundations of an earlier and smaller building were also discovered, presumably the original Saxon church, and the bases of two Norman columns were found *in situ*, proving that the original fabric must have been rebuilt shortly after the Conquest. The earliest portion of the church now existing is of the thirteenth century. The chancel contains two sedilia and a piscina, with a priest's door on the south side. All belong to the thirteenth century, and are contemporary with the fine east window, the tracery of which is unique in England, with one exception; the only other exactly similar window being at Shifnal, in Staffordshire.

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* A paper read before the Liverpool Architectural Society.

Heswall.

On the coast of the Dee is the village of Heswall. Here we find that the only ancient portion of the church remaining is the tower, dating from about 1460—a typical example of a Wirral tower, and, with the exception of the buttresses and ornamented battlements, very similar to the one at Woodchurch.

As the tall graceful spire is characteristic of the Northamptonshire churches, so it may be said the square massive tower is the distinguishing feature of the churches of Wirral.

It is worthy of note that Heswall and Woodchurch were the only two churches in Wirral which were entirely independent of any monastic connection.

Neston.

Continuing along the coast of the Dee, we find again at Neston that the tower is all that is left of the *old* church. It is somewhat earlier than Heswall, and probably dates from the beginning of the fifteenth century. It differs from the other towers in having two lights, one above the other, in the belfry stage. As a priest is alluded to in the Domesday book, a church certainly existed here before the Conquest, and this is confirmed by the fact that a number of ancient carved stones (probably Saxon) were found during the restoration. The original church was supposed to date from about 1150.

Burton.

The church dedicated to St. Nicholas at Burton is an exceedingly plain structure. The present tower, nave, chancel and north nave are comparatively modern, having been erected in 1721, though it is quite possible that some portions of the building may have been recased at that date. It is recorded that a tower was built in 1500 on to the church then existing, but there can be little doubt that it must have been demolished prior to 1721; the stones were probably re-used in the erection of the present tower.

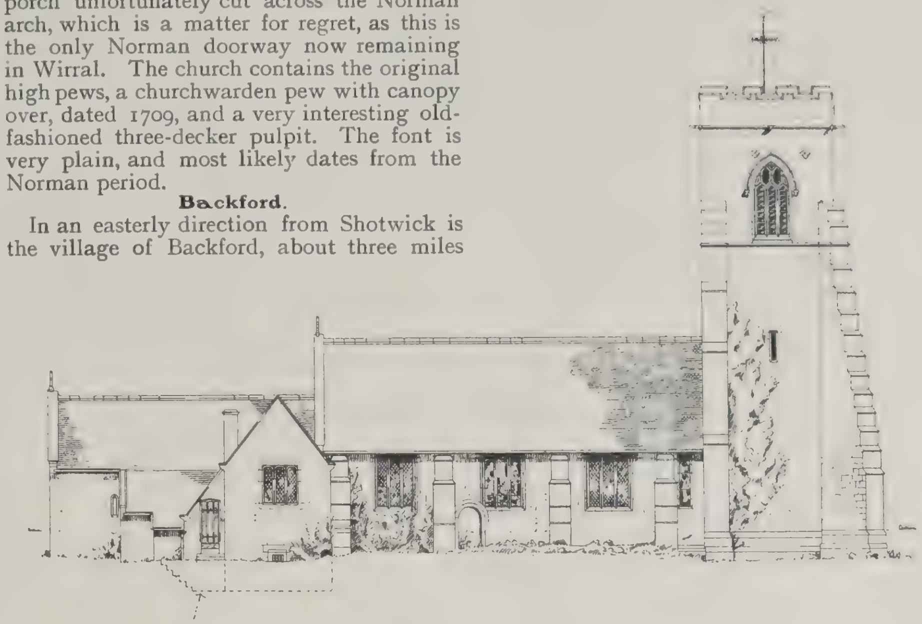
Shotwick.

As already mentioned, Woodchurch has the quaintest church, but Shotwick Church is the most picturesque in its situation. The visitor finds here an old-world village almost undisturbed by modern influence. Away from the busy high road, in this peaceful spot one can readily conjure up visions of by-gone days, when Shotwick Castle was a royal residence and the starting-point for expeditions to Ireland and Wales; but it is difficult to imagine that the village once stood on the very banks of the Dee, for it is now about three miles inland, though the view from the top of the church tower shows where the flat lands have been reclaimed from the sea, what was once a waste of water being now cultivated ground. The present church consists of a nave and chancel, a north aisle and the usual western tower. The nave is divided from the aisle by three octagonal columns with moulded caps, supporting plain chamfered equilateral arches.

In the Chester Cathedral library is the record of the building of a Saxon church, A.D. 900, and this church is referred to in the Domesday book. I think we can still trace in the existing fabric as far back, at any rate, as the Norman church. In the south wall is the original Norman doorway with its three orders of characteristic ornament, and the whole of this wall up to the small break where the chancel begins appears to be of the same date. There is a break in the large internal pier which comes exactly opposite the exterior break, and this most probably defines the extent of the original Norman building; the north wall being along the line of columns. Following the usual custom in country churches, the chancel would next be added, and at the same time, or shortly afterwards, the north wall would be removed and the north aisle erected. Most of the windows appear to have been inserted in older walls, and various additions and alterations made during the fifteenth century. The beams of the south porch unfortunately cut across the Norman arch, which is a matter for regret, as this is the only Norman doorway now remaining in Wirral. The church contains the original high pews, a churchwarden pew with canopy over, dated 1709, and a very interesting old-fashioned three-decker pulpit. The font is very plain, and most likely dates from the Norman period.

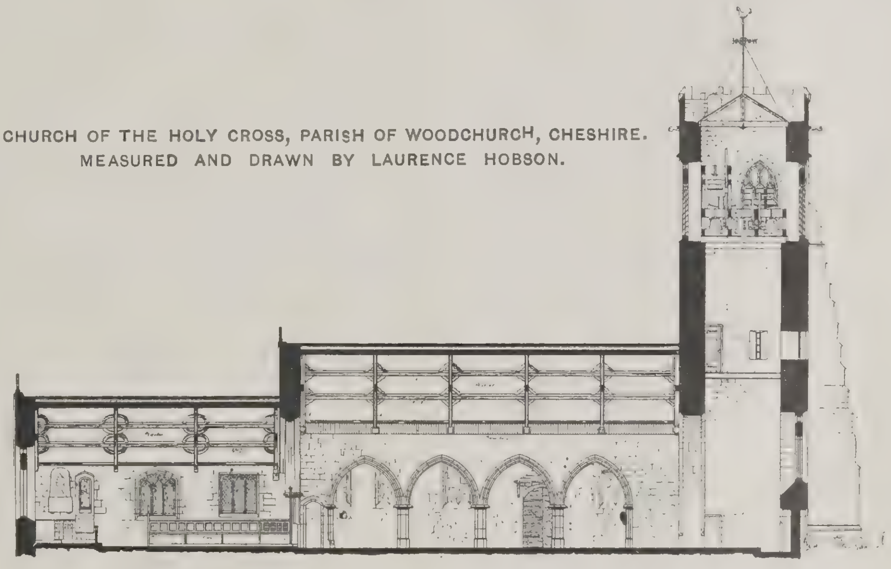
Backford.

In an easterly direction from Shotwick is the village of Backford, about three miles

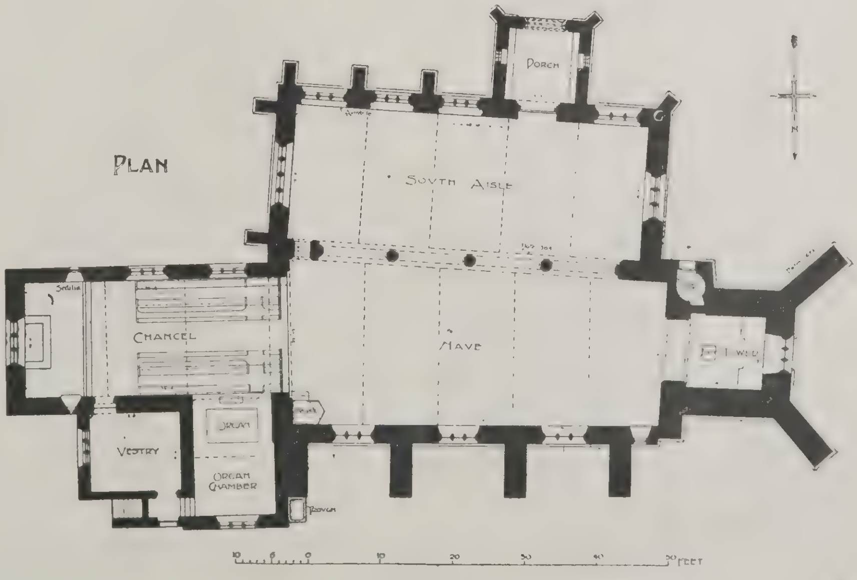


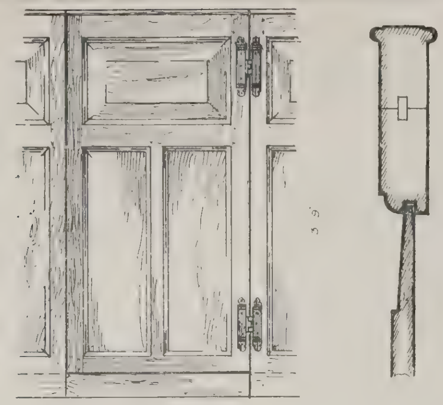
NORTH ELEVATION.

CHURCH OF THE HOLY CROSS, PARISH OF WOODCHURCH, CHESHIRE.
MEASURED AND DRAWN BY LAURENCE HOBSON.

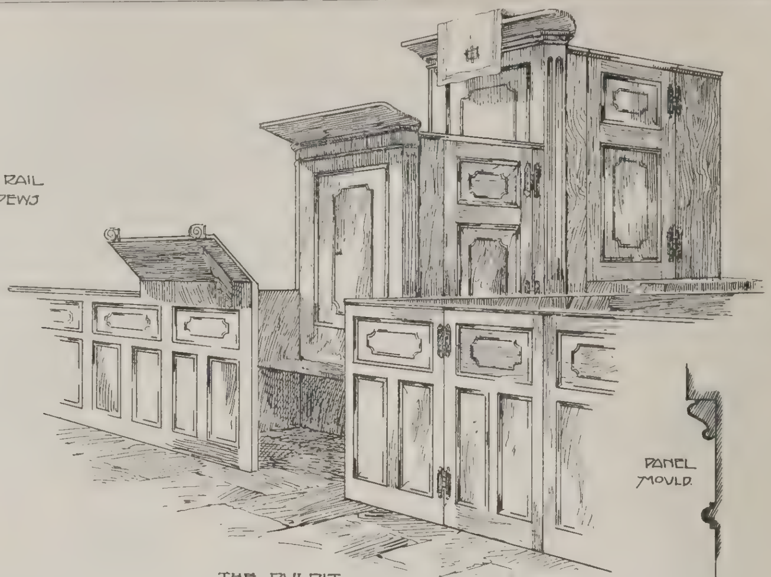


LONGITUDINAL · SECTION :





A PEW DOOR



THE PULPIT

SHOTWICK CHURCH, CHESHIRE.
DRAWN BY LAURENCE HOBSON, A.R.I.B.A.

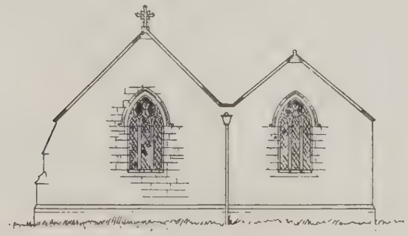
north of Chester, and close to the main road. The church consists of a tower, nave, north and south aisles, and chancel. The last dates from the thirteenth century. The east window and one on the north side are the original Early English, with a small door on the south side of the same period. The tower is very similar to that at Shotwick, and is either late fifteenth or early sixteenth century; it contains some very good examples of the work of that period. The body of the church as it now stands was built in 1879; the brick walls of the previous structure were found to be in such good condition that they were merely cased outside with stone and the interior plastered. This brick building was erected in 1728, replacing an earlier fabric of which all traces are now lost. In the chancel are two small piscinæ, and the nave contains a very interesting old black-letter Bible in excellent preservation, dated 1617, and chained to the desk in accordance with the ancient custom.

Eastham.

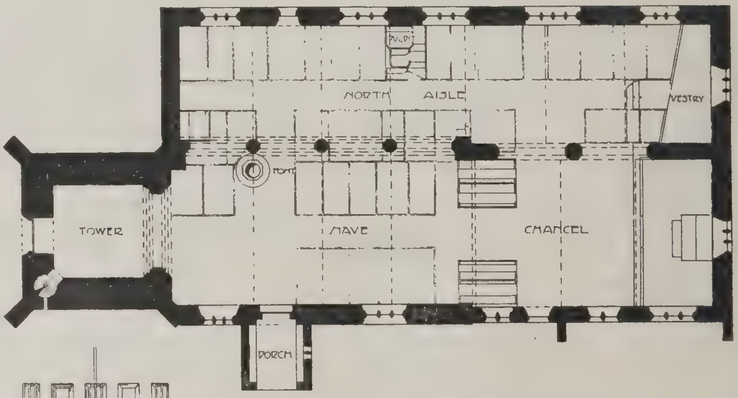
The church dedicated to St. Mary at Eastham was granted to the abbey of St. Werburgh about the year 1152. The only part remaining of the original Norman church is a portion of the north wall of the chancel. Of the present church, which was restored in 1875, the tower and spire are of the Decorated period, the south aisle and chancel being of the same date. The last is lighted by a fine five-light window filled in with reticulated tracery. The nave is divided from the aisles by Early English arcades, and lighted from above by a clearstory. The mouldings of the column caps are very varied in design, and afford good examples of thirteenth-century work. The remainder of the church is of the Perpendicular period, with the exception of some modern additions. The chapel at the end of the north aisle belonged to the Stanleys of Hooton, and contains the family tombs. The font is carved out of a solid block of white stone, and is probably of the same date as the original Norman church.

Lower Bebington.

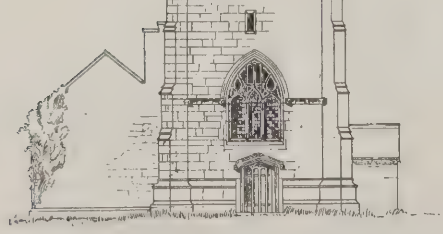
St. Andrew's, Lower Bebington, is the largest and architecturally the most interesting of the Wirral churches, and contains examples of nearly all phases of mediæval architecture from the time of the Conquest. There is no indication of a church here in Domesday, but a priest is mentioned at Poulton, which was included in the same parish. The nucleus of the present church was of Saxon date, and occupied the position of the present nave. In the Norman period



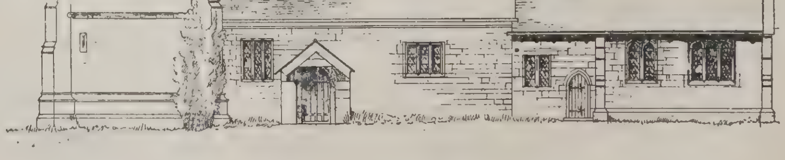
EAST · ELEVATION.



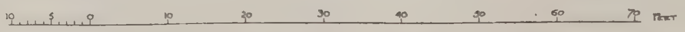
GROUND · PLAN:



WEST · ELEVATION:



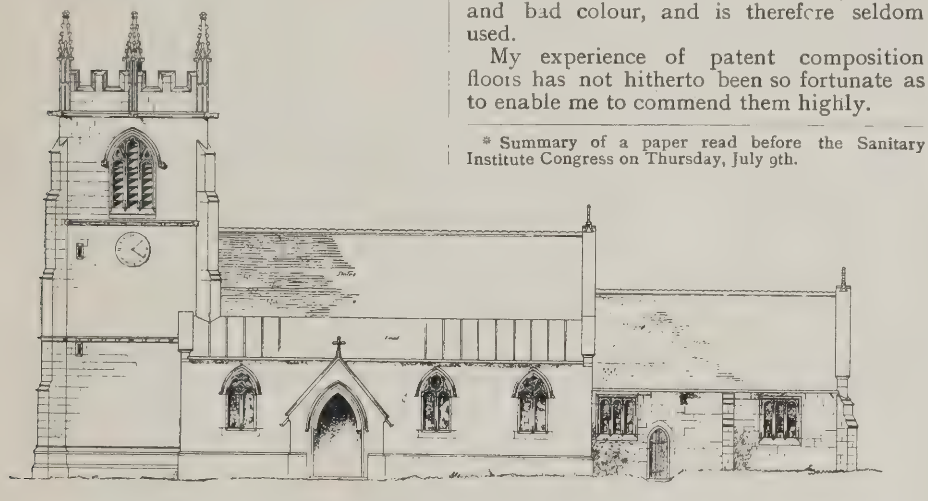
SOUTH · ELEVATION:



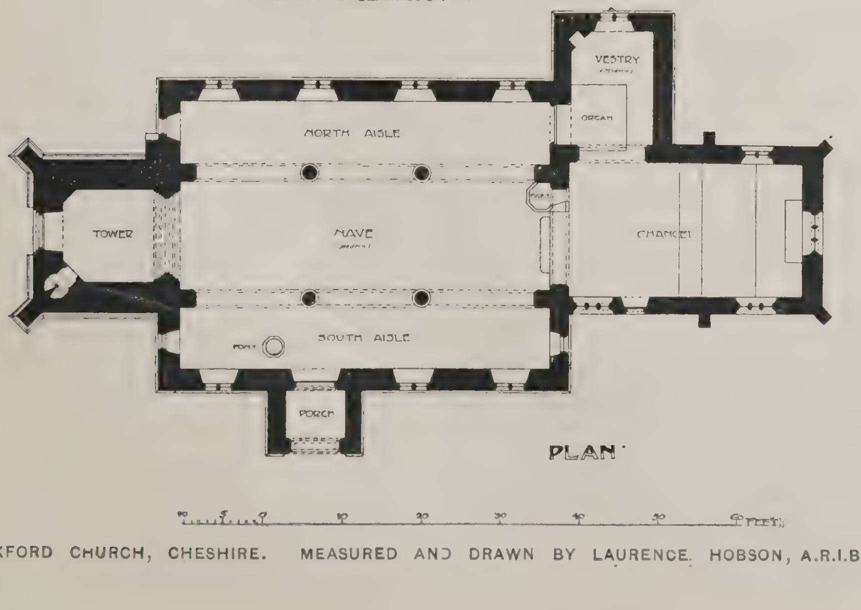
SHOTWICK CHURCH, CHESHIRE. MEASURED AND DRAWN BY LAURENCE HOBSON, A.R.I.B.A.

this earlier church was taken down and enlarged, and a new aisle and chancel added. The Norman columns and south wall still exist, the two small Early Decorated windows having been inserted about 1280.

Just prior to the Reformation, about the year 1515, a great scheme was contemplated for rebuilding the whole church. The work was commenced from the east end, and at the time of the dissolution of the monasteries in 1536, when all ecclesiastical work came to a standstill, the chancel and side aisles only had been completed. Here the work ceased, and was joined on to the old Norman church, the connecting arch having to be "skewed" owing to the new chancel being of a different width to the old nave. It will be seen by reference to the plan on p. 338 that there are four large piers in the centre, which has led some writers to conclude that a central tower was contemplated, but as the western tower, built about the year 1320, would be standing at the time of the rebuilding, it would be hardly likely that the builders would think of erecting a second one. The north aisle was added in 1845, the original windows, door and porch being re-used. The Norman nave arcade is a typical example of the period, and the Perpendicular windows of the chancel, though late in the style, are of good design and detail. There is a small window on the south side of the chancel which is so arranged that on St. Andrew's day the sun shines on a niche which once contained the statue of the patron saint. The font is in excellent preservation, and in all probability is of the same date as the Norman church, though some antiquarians have asserted that it is a veritable relic of Saxon times.



SOUTH·ELEVATION :



PLAN·

BACKFORD CHURCH, CHESHIRE. MEASURED AND DRAWN BY LAURENCE HOBSON, A.R.I.B.A.

DETAILS OF A HOSPITAL WARD.*

By A. SAXON SNELL, F.R.I.B.A.

THE floor of a ward should be laid on a solid foundation, and the surface should be as impervious as it is possible to make it. Also it should be smooth and free from holes or crevices likely to retain dirt or dust. No one thinks nowadays of using plain jointed soft wood floors.

Modern floors are of several kinds: Hardwood block floors; hardwood tongued boards laid in narrow widths, secret nailed and polished; asphalt; terrazzo; patent composition floors such as Euboeolith, &c. The hardwood floors are most frequently made of oak or teak. Hitherto I have myself adopted kiln-dried maple in very narrow widths. In addition to being an exceedingly hard and unwearable floor, its light colour shows up dust much more easily than dark woods, and this, to my mind, is an important detail. The most usual finishing to wood floors is beeswax and turpentine highly polished. I believe that if this is regularly wiped over with a wet rag, and as regularly polished, it is a very good surface; though no doubt it is desirable to have the surface entirely cleaned off and renewed at intervals. Terrazzo floors I do not think quite so impermeable as they are supposed to be. The main part of the material is cement, and it is well known that both cement and marble chips are fairly absorbent materials. The comparative impermeability of this floor is due to the high polish it receives when first laid, and that is very soon worn off. Asphalt is, no doubt, the most impervious of floor materials, but it is of a dark, uneven and bad colour, and is therefore seldom used.

My experience of patent composition floors has not hitherto been so fortunate as to enable me to commend them highly.

The skirting to the floors should be rounded so as to form a good hollow. The most usual radius is from 2½in. to 3in. Latterly I have used 1¼in. only, which is quite sufficient for its purpose. All that is necessary is to have such an angle as will allow the whole surface to be easily and rapidly cleaned, and prevent stagnation of air. It is best formed of the same material as the floor. There are practically two opposite principles which govern the material of which the wall surfaces should be composed, and these are derived from views on that much vexed subject — ventilation. It is safe, however, to assert that at the present time, for hospital ward walls, at least, impervious walls are mostly in vogue. The use of tiles has no doubt given us a more impervious and even surface over a large area, but it is discounted by the numerous joints. The ideal surface would no doubt be an unbroken and polished surface such as obtains on tiles, affording no ledges for the lodgment of dust; but this has been fairly well achieved by the use of enamel paint upon hard trowelled cement surfaces. It is scarcely possible to obtain a more generally smooth surface than with trowelled cement—Keene's or Sirapite, for instance. These can be brought to a polished surface. There can be no question that ceilings should be non-porous, and they are best painted. As to the best form of window for a hospital ward, there appears to be no general agreement. The most usual is the ordinary sash window with a hopper above opening into the ward, with spandrel sides to prevent down-draught. It would appear, however, that its form and construction involve the many angles, crevices and hidden voids which in other parts of the ward we strive so much to avoid. Casement windows with solid frames are at least not open to this objection. I have used casement windows brought down to within 12in. of the floor, and with hopper next the ceiling. The casements open inwards, and thus form a protection for the bed. It is possible also by opening the windows to their fullest extent to fairly flood the wards with air. At Charing Cross Hospital, I am adopting a form somewhat similar to what I believe is known as the "Middlesex" window, owing to the alleged fact that it was first used at that hospital. There are five sashes of equal size in the height of the window, all of which (excepting the lowest) are hung on centres and controlled by one rod and lever. The sashes close one upon another, and there are therefore no transoms. The lowest sash is separately hung on the bottom rail. It is obvious that a window so constructed can be opened to a much larger extent than is possible with the ordinary sash window. I should add that all except the controlling lever of the opening apparatus is fixed on the outside of the window. If it is possible to fix the glass of the sashes quite flush with the inner surface of the sashes, a great advance will be made. Doors should be made wide enough to allow the passage of a bed. It is desirable that the upper panels should be glazed with clear glass. The material for joinery might be considered here. Hard wood throughout is generally adopted, where the question of cost is not vital—hard wood oiled or French polished. Its comparative freedom from material shrinkage and its harder or less absorbent surface are great advantages. I am hoping in time to obtain what I may call solid joinery, *i.e.*, built up without panels. Of course, it is possible to have solid or flush panels, but shrinkage soon shows up the joints, which then become dust traps impossible to clean. There are some Canadian doors now made of which the principle of construction could, no doubt, be applied. They are made up of quite small sections of wood closely fitted together, and sheathed with hard wood dovetailed on, the whole pressed together by hydraulic pressure. They are made to imitate the ordinary panelled door, but one is being made for me now—as an experiment—of *solid* soft wood, sheathed all round in oak.

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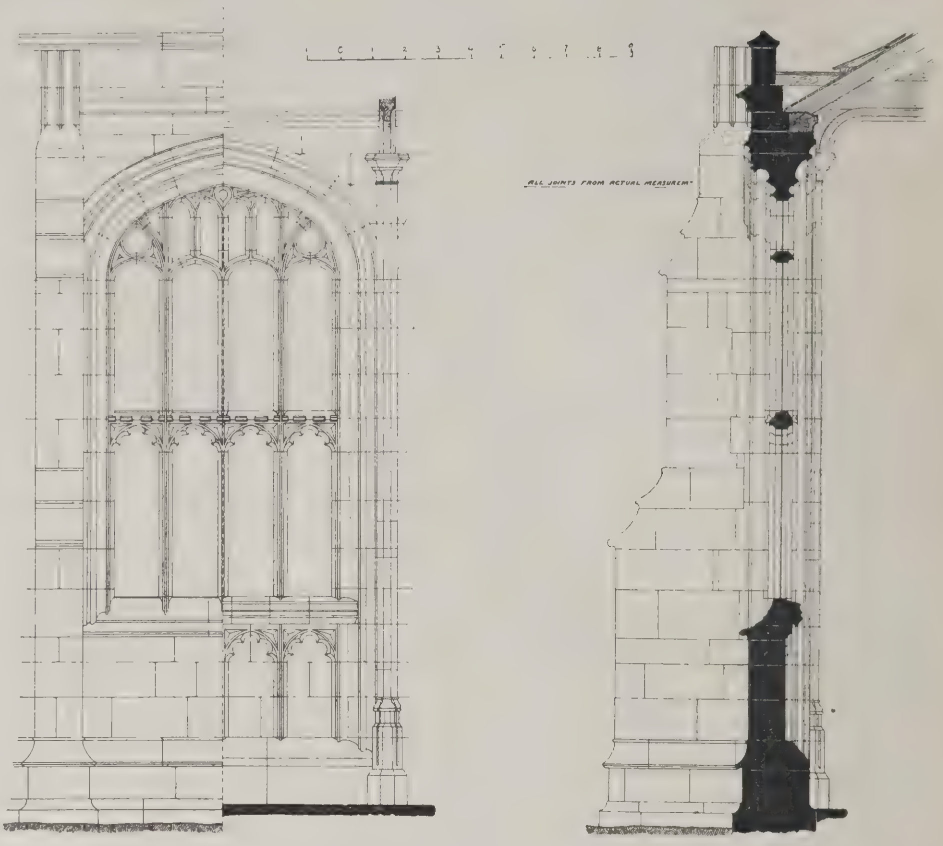
* Summary of a paper read before the Sanitary Institute Congress on Thursday, July 9th.

In the furniture and fittings of wards, for which the architects are responsible, there is a general falling away from the principles of construction; although I am bound to add that some very notable improvements have been made in late years. Bedside lockers especially call for consideration. The tops are now usually of glass or "Marmorite," and if it were only possible to get rid of the closed cupboards, it would not be difficult to design them generally so that every part could be readily and easily cleaned. The mention of cupboards reminds me that they should be as far as possible banished from the ward. One at least is, of course, necessary for holding surgical and medical appliances, lint, medicines, &c., but this should not be placed or built against the wall. It should stand out in the centre of the ward, and be constructed of hard wood, framed and glazed all round and on top, and fitted with glass shelves. Fixed or heavy tables and chairs are to be avoided. It is quite possible to make a light table rigid.

One or other of the forms of stoves which is built up with plain fire-brick and bricks, or tiles, is preferable. There is a greater amount of heat given out by radiation, and far less by conduction, and there are few lodgments for dust and dirt. It is not the purpose of this paper to deal with such large and controversial subjects as heating and ventilation, or to enter into any discussion upon the relative merits of natural or mechanical ventilation.

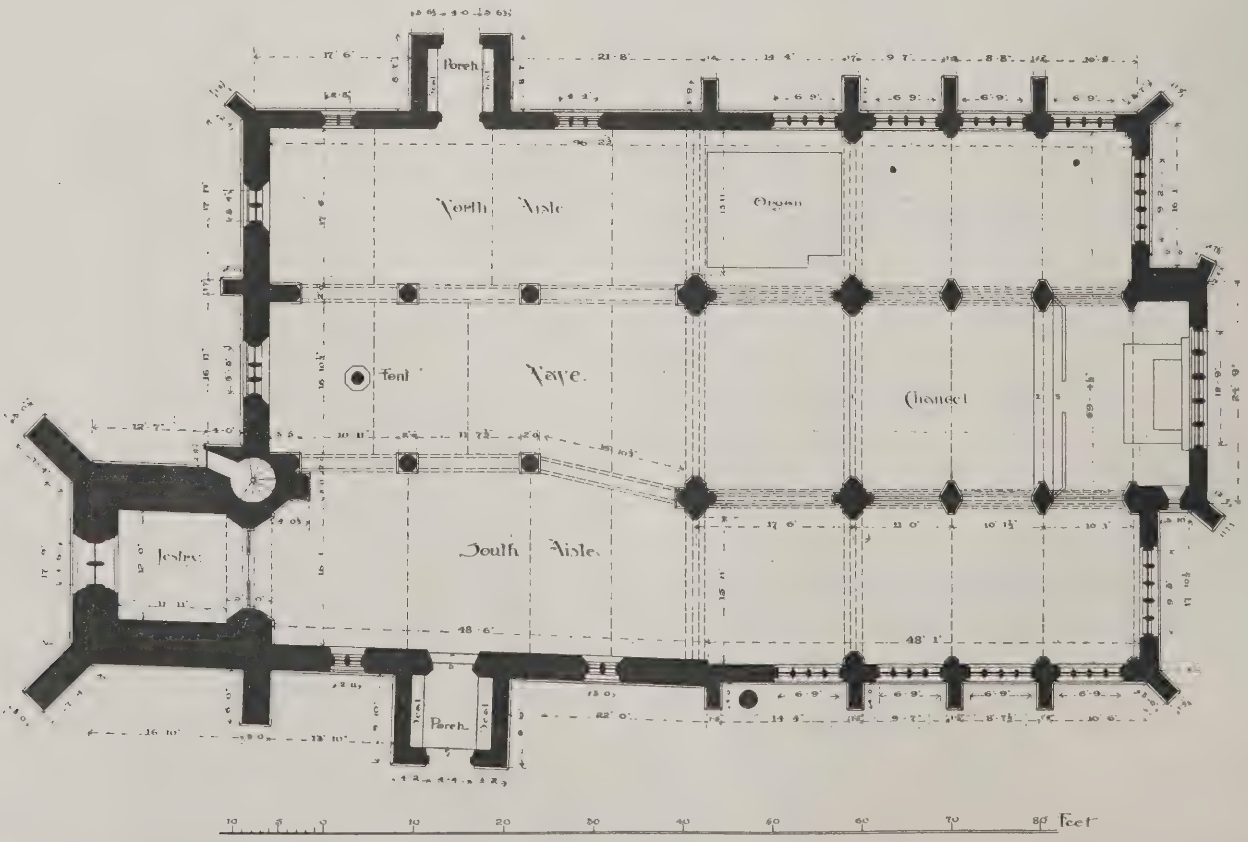
It is only necessary to remind you that, whatever pipes or fittings are used, they should be so placed and constructed as to be easily kept clean.

A fixed lavatory basin has been regarded as quite inadmissible in the ward itself, but the inconvenience of hand basins and the great improvement in the construction of fixed lavatories, have combined to overcome the objection to their being in the ward. I should like to refer to the deceptive character of so many sinks and basins in the market. They are beautifully designed to avoid anything in the nature of dirt crevices or mouldings on the surface, but the glazed surface and rounded angles are confined to the top and sides. Underneath they are rough, angular, and full of pockets which are never likely to be cleaned from the day they are fixed.



Half Exterior Elevation. Half Interior Elevation. Section.

ST. ANDREW'S CHURCH, LOWER BEBINGTON, CHESHIRE: WINDOW ON SOUTH SIDE OF CHANCEL. MEASURED AND DRAWN BY LAURENCE HOBSON, A.R.I.B.A.



ST. ANDREW'S CHURCH, LOWER BEBINGTON, CHESHIRE: PLAN. MEASURED AND DRAWN BY CHARLES W. HARRIS.

Keystones.

The Eleventh International Congress of Hygiene will be held this year in Brussels, from September 2nd to the 8th. Doctors, architects, engineers, statisticians and others interested in questions of hygiene are invited to take part in the deliberations.

The Devon and Exeter Architectural Society are shortly to pay a visit to the new Royal Naval College at Dartmouth. The members will be accompanied by Mr. Aston Webb, according to whose designs the college is being built.

Particulars of the A.A. Day Courses in Architecture for the Session 1903-4 have been issued in pamphlet form, and can be obtained at 56, Great Marlborough Street, W. The winter term commences on September 28th.

The "Boardman" Travelling Studentship in Architecture, value £15, has this year been awarded to Mr. George Mobbs, junr., pupil of Mr. Albert C. Havers, architect, Bank Plain, Norwich and Sheringham, for his measured drawing of "The Cloister," Norwich Cathedral.

In the Competition for the best set of designs for a block of first-class business premises proposed to be erected at the corner of the Penrhyn and Conway Roads, Colwyn Bay, the first premium has been awarded to Mr. E. A. Lloyd, of Blackburn, Lancashire, and the second to Mr. D. M. Roberts, of Colwyn Bay.

The Strand Improvement Scheme.—The London County Council has erected on the site of the Strand improvement several lines of scaffold poles, along which have been affixed white bands showing the different lines of frontage proposed. The public can now judge the value of the new proposals, as well as the criticism bestowed on the original design.

A new Reredos at St. Erth Church has been erected entirely of West of England grown oak. It is in the fifteenth-century style of Gothic art, occupying the whole of the space beneath the great east window, and is made from a design by the Rev. R. Medley Fulford, formerly F.R.I.B.A. The work has been carried out by Messrs. Harry Hems & Sons, of Exeter.

The Manchester Society of Architects on July 4th made a sketching visit to Whalley and Mytton Churches and to Stronghurst College, the early Renaissance portion of which provided some interesting material. The rain unfortunately prevented a good attendance at the visit to the new car depôt in Hyde Road. Mr. J. Gibbons, the architect, explained the design and construction of this interesting building, the first part of which is now approaching completion.

A new Presbyterian Church at Builth Wells has just been completed at a cost of £4,500. The style is Perpendicular Gothic, and the walls have been built of the local blue stone with freestone dressings. The school premises comprise a school or lecture hall and nine classrooms, with scullery and lavatory accommodation. Mr. D. W. Richards, Newport (Mon.), was the contractor, and Messrs. Habershon, Fawckner & Groves, Newport and Cardiff, were the architects.

A Memorial to the late Mr. Onslow Ford, R.A., has been erected at the junction of Abbey and St. John's Wood Roads. Mr. J. W. Simpson, the well-known architect, designed the monument and superintended its execution, and Mr. Lucchesi executed the medallion portrait of his master, while the borough laid the necessary foundations. The memorial is in the form of an obelisk. On one side is the medallion portrait already referred to, and on the other is a replica of the Muse at the base of the Shelley Memorial at Oxford.

Leith Poorhouse Competition Designs.—At a meeting of the Leith Parish Council held last week it was decided by eleven votes to six that plan No. 6 be selected for the new poorhouse. The author is Mr. J. M. Johnston, of Leith.

Architects' Registration.—At a meeting held last Thursday the Leeds and Yorkshire Architectural Society expressed itself in favour of the statutory registration of architects; and further expressed the hope that the R.I.B.A. would take early measures to give effect to a principle "which would give our profession a recognized status, and raise the standard of architectural education and training throughout the kingdom."

Clifford's Inn.—On Thursday next, at 12 o'clock, there will be sold by public auction in one lot, at 3, Clifford's Inn, Fleet Street, some rare seventeenth-century woodwork and carving ascribed to Grinling Gibbons. The lot includes a handsomely carved chimney-piece and four doors, the whole of which can be easily removed and refitted. The proceeds of this sale will go towards the funds for the proposed formation of the new School of Law.

The International Society of Sculptors, Painters and Gravers has been invited by the leading American academies and art institutions to exhibit the work of its members in the United States. The society has accepted the invitation, and exhibitions, commencing in October, have been arranged for in the Pennsylvania Academy of the Fine Arts, Philadelphia, the Carnegie Institute, Pittsburg, the Cincinnati Art Gallery and the St. Louis Museum of the Fine Arts during the period of the Exposition in that city.

Nidd Valley Arbitrations.—Lieut.-Colonel W. H. Wellsted, C.E., the umpire, has just issued his award, amounting to £14.585, in respect of 1,415 acres of leasehold land in the Nidd Valley taken for the construction of reservoirs and gathering ground for the Bradford Corporation waterworks. The claim was for £28,220, whilst the value placed upon it by the Corporation witnesses was £7,973. The arbitrators for the claimant and Bradford Corporation were Mr. Thomas Fenwick, C.E., of Leeds, and Mr. Charles Gott, C.E., of Bradford, respectively.

The Campanile of St. Mark.—Signor Beltrami has issued his first report on the results of his investigations of the Campanile of St. Mark, at Venice. From this report it appears that there is no evidence of any damage caused directly by subsidence of the foundation level. A depression in the northerly direction to the extent of 9·5 centimetres was noticed, which depression is in direct connection with the corresponding inclination towards the north which the campanile had for some time been observed to show. The questions now to be solved are whether the base should be enlarged and whether the weight of the new campanile, as compared with the fallen one, should be reduced.

A Church Competition.—In February last a competition for designs for a Baptist church and schools in the High Street, Ilford, was held. The design by Messrs. George Baines, F.R.I.B.A., and R. Palmer Baines, architects, 5, Clement's Inn, Strand, London, W.C., has been selected. Circumstances have transpired since the competition was promoted which prevent the committee from proceeding at once to build, and the matter is therefore postponed for the present. The selected design provides for a church, to seat about 860 adults, with the usual vestries, &c, and a school, with large central hall, having many classrooms opening into it, divided by swivel partitions. Seniors' and infants' classrooms, kitchen, &c., are all on the most recent model plan. The whole scheme is estimated to cost upwards of £8,000. The style is Perpendicular. The buildings would be faced with red bricks, with Bath-stone dressings.

Opening of Stonehaven Bay Hotel.—A new hotel at Stonehaven has been erected from designs by Mr. Marshall Mackenzie, A.R.S.A., of Aberdeen. The work has been carried out by the following contractors, under the superintendence of Mr. William Rattray, clerk of works, Aberdeen:—Mason, Pringle & Slessor, Aberdeen; joiner, Clark & Donaldson, Aberdeen; plumber, Blaikie & Sons, Aberdeen; electrical work, The Electrical Engineering Co., Aberdeen; slater, Mr. Farquhar, Aberdeen; plaster, Valentine & Son, Stonehaven; painter, Murray & Mitchell, Aberdeen.

The Passmore Edwards Polytechnic, Peckham Road, Camberwell, which is now in course of erection, occupies a site adjoining the South London Art Galleries. which will form part of the large block. The site was purchased by the Camberwell Borough Council, and Mr. Passmore Edwards (who also gave the Lord Leighton memorial building adjoining the new wing) is largely contributing towards the cost of the substantial structure which is being put upon it. Large and amply-lighted workshops will be provided for technical trades, such as masons, bricklayers and brickworkers, carpenters and joiners, plumbers and metalworkers, bookbinders, painters and decorators. There will also be a large room devoted to building construction. The buildings will be fire-resisting, with concrete staircases, and the whole of the workshops will be lined with glazed bricks.

South-western Polytechnic.—The lectures on architectural history given by Mr. Banister Fletcher A.R.I.B.A., and arranged under the auspices of the Board to promote the extension of university teaching of the University of London, held during the past session have been very successful. Sixty-three students entered for the course, and at the examination held at the conclusion eleven students satisfied the examiner (Prof. W. R. Lethaby, of the Royal College of Art), and six of these qualified by examination for the sessional certificate in honours. The successful students are:—Frank L. Atwell, Arthur E. Colman, Albert T. J. Harris,* John L. Howland, Frederick G. Pain,* Albert A. Reeve, Gerald G. Rogers, Charles J. Smith,* Ada M. Warren,* Emily M. B. Warren* and Earnest A. Weston.* (Those marked with an asterisk qualified for the certificate in honours.) For the coming session, which opens at the Chelsea Polytechnic on Monday, October 5th, at 7 p.m., visits are being arranged to important buildings and museums around London.

Proposed Rebuilding of Lambeth Bridge.—The Bridges Committee will shortly bring before the London County Council for its approval a proposal that application should be made to Parliament in the next session for powers to rebuild Lambeth Bridge. The question of the gradients practically decides whether it is to be built of steel or masonry. At present the gradients are very steep, being from 1 in 19 to 1 in 22 on the north and from 1 in 20 to 1 in 23 on the south. A masonry structure could not be built with a better gradient than 1 in 25, which is about the same as the northern approach to Southwark Bridge, and that, on account of its steepness, is little used for vehicular traffic going southwards. On the other hand with a steel bridge a gradient of 1 in 30 can be obtained and better facilities for navigation afforded during construction than has been the case at the new Vauxhall Bridge. The committee therefore recommend the construction of a steel bridge, which is to have a width of 60ft. The estimated gross cost is stated to be £872,000, of which the cost of the acquisition of property necessary to provide adequate approaches amounts to £410,000. The actual cost of the construction of the bridge is set down at £330,000.

UNDERGROUND WATER SUPPLIES.*

By **WILLIAM H. MAXWELL, A.M.I.C.E.,**
Borough and Waterworks Engineer,
Tunbridge Wells Corporation.

THE recent years of drought have been the means of directing greater attention to the subject of water supply from underground sources, and the increased conservation of these supplies indicates how fully the importance of this question is now appreciated. Many parts of England, and the south-eastern counties in particular, do not possess anything approaching those ideal surface-gathering grounds of Wales and the North, and other means of supply have therefore to be sought, such as the abstraction of water from underground after it has penetrated varying depths through strata of different kinds. One of the principal of such water-bearing rocks is the chalk, which, as if by a wise provision of nature, occupies that part of the country where other sources are scarce.

The utilisation of underground supplies is of the greatest interest to waterworks engineers, but I regret, owing to the very limited leisure at my disposal, that I have not found it possible to do more than offer the following few general remarks thereon, which I hope, however, may serve to introduce some of the principal questions bearing upon this subject for discussion by those present.

Geological Information Available.

In his search for underground water the engineer is brought into close practical contact with the subject of the geological structure of the district in which he proposes sinking for a supply, and the importance of detailed information under this head will be well known to all present. Such information, however, in the detailed form often required by the water engineer, is not always available, although, as all are aware, a great deal may be derived from the 1in. maps of the Geological Survey, and further local details from the M.S. maps on the 6in. scale supplied by the Geological Survey Office for those parts of the country which have been so revised.

I was much gratified a few years ago to find that the data thus available is now being largely supplemented, in what appeared to me to be a most valuable form for the purposes of the waterworks engineer, by the publication by the Geological Survey Office of a series of "memoirs" dealing with the underground waters of the different counties. Two of such memoirs have so far been published, the first (1899) dealing with the "Water Supply of Sussex from Underground Sources," and the second with that of Berkshire. The memoirs give details of a large number of well-sections throughout the county, with particulars of the quantity and quality of water obtainable therefrom, and other local geological information affecting water supply.

Quality of Underground Water.

The quality of water obtainable from underground sources in any locality depends upon the chemical character of the material or strata through which it has percolated, and its quantity will depend on the hydrogeological structure of the district. The value of underground supplies for waterworks purposes has long been appreciated. In the sixth report (1874) of the Rivers Pollution Commission we find deep-well waters described as being "almost always bright, sparkling, palatable and wholesome"; the same report also continues to the effect that "their uniformity of temperature throughout the year renders them cool and refreshing in summer, and prevents them from freezing readily in winter. Such waters are of inestimable value to communities, and their conservation and utilisation are worthy of the greatest efforts of those who have the public health under their charge."

Water-Bearing Strata.

Some of the principal water-bearing strata, named in geological order commencing with the most recent, from which supplies have been obtained are: Valley gravels and drift deposits, Bagshot beds, Reading beds, Thanet sands, chalk, green sand, Ashdown sand, oolite, new red sandstone, millstone grit.

The water from the surface gravels is of doubtful quality, being obtained from shallow wells and more or less liable to pollution; it should be distinguished from deep-wall waters obtained by wells or borings into water-bearing strata situated beneath or between impermeable beds, such, for example, as the water obtained by boring through the Tertiary formations into the chalk below in the London basin, or that obtained from the Ashdown sand lying beneath an impermeable bed of Wadhurst clay, where varying amounts of artesian head are met with.

Conditions determining the Quantity of Water obtainable.

The quantity of water which may be abstracted by means of wells or borings from any contributing underground area will depend upon a variety of circumstances, determinable to varying degrees of exactness, among which the following conditions may be enumerated:—

(1) The boundaries or extent of the underground contributing area or watershed.

(2) The area of "outcrop" of the water-bearing strata, and the extent to which the slope of adjoining impervious areas may conduct the rainfall falling thereon on to the porous "outcrop."

(3) The annual rainfall over the contributing area, and the proportion thereof percolating annually in at the outcrop, and ultimately finding its way to the underground store.

(4) The degree of porosity or permeability of the water-bearing strata.

(5) The quantity of water, or leakage, flowing out of the underground store, through natural outlets, as for example into the sea, or beds of rivers.

(6) The percentage of the total percolation into a water-bearing strata which is again recoverable by means of pumping stations.

To define with a reasonable degree of certainty the true contributing area is by no means an easy matter, and must always involve a close geological and physical examination of the country in the neighbourhood of the outcrop.

Rainfall and Percolation.

With the records now available, the rainfall will usually be readily obtainable, but the question of the amount of "percolation" is a point involving considerable difficulty and uncertainty. The subject of "percolation" is of itself a large and interesting one, and among other things depends on:—

(1) The manner in which the rainfall reaches the ground, whether in numerous slight showers or in heavy rains.

(2) The time of the year when the greatest rainfall occurs.

(3) The surface slope of the ground and the dip of the underlying strata.

(4) The nature of the soil or strata; its degree of porosity or permeability.

There is much difference of opinion as to the ratio existing between the *percolation* and *rainfall* in different classes of soil or strata, and the question is one upon which further observations and experiments are needed. In the case of the chalk, after considering all the available facts, the Royal Commission on the Water Supply of the Metropolis (1892) adopted the figure of 7in. of percolation as an average among ordinary years' rainfall over the chalk area within the Thames basin, while during a succession of dry years this, it is stated, may not amount to more than 4in. per annum. On the other hand, observations of the amount of water given off by a certain area of chalk have shown the percolation to amount to as much as 10in. per annum.

Depletion of Underground Supplies.

Another important question is that of the gradual permanent depletion of underground supplies, as distinguished from mere local and seasonal changes of water-levels depending on the fluctuations of the rainfall. A good deal has for many years been heard of the depletion of the store of water in the chalk in the London basin and in the surrounding country districts, through the extensive pumping operations of the London water companies and the numerous private supplies also now drawn therefrom. The effects of these operations, it is alleged, are shown by the reduction of the water-levels in wells and boreholes, by the reduction in the yield of springs and the drying up of river-heads, watercress-beds, &c., and a decline in the volume of rivers in the country around London.

It is, of course, clear that if more water is abstracted from any given area than percolates into it the level will be lowered within that area so long as such abstraction continues. This is illustrated by the excessive pumping from under London, where it would appear that water is being abstracted faster than it can pass through the highly-compressed chalk, thus maintaining a permanently low level of the plane of saturation, and affecting the slope of the underground water outwards from that centre.

The radius within which extensive pumping operations affect underground water-levels in different strata, and the influence of the same upon surface springs, river-heads, &c., in the country around the site of pumping are matters of first importance, and upon which continued observations over long periods are necessary before reliable data can be established. In considering the effects of pumping on the water-levels in any underground area difficulties arise in discriminating with certainty between what is attributable to seasonal changes or variations of rainfall and what may be regarded as permanent depletion of the area through pumping operations being in excess of the average percolation at the "outcrop."

The conservation of Kentish waters has received a good deal of attention of recent years, and the drying up of a well-known stream—the Cray river—alleged to have been largely due to extensive pumping of underground water by a London water company, led to the formation of "The Underground Water Preservation Association," in 1902, for the purpose of preventing the excessive abstraction of water, and conserving the same for the use of inhabitants in the immediate district concerned. To what extent these objects can be achieved, in view of the present state of the law of underground water, as settled in 1859 by the case of *Chasemore* v. *Richards*,* and followed in subsequent decisions, I will not venture to predict.

Types of Pumping Machinery and Motive Power for Deep-well Supplies.

The question of the best type of pumping plant for deep wells or borings is one which depends largely on the circumstances of the case to be dealt with. For borings, the principal alternatives are:—

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* A paper read before a meeting of waterworks engineers and others held on June 19th last at the Agricultural Hall, Islington, in connection with the Building Trades' Exhibition.

* House of Lords Cases, 349.

(1) Ordinary single-acting deep-well pumps.

(2) Double-acting or concertina type of pumps.

(3) Raising by compressed air.

Where the well or boring is situated at the main pumping station, the question of motive power is frequently readily solved by the use of steam from an existing boiler-house, but where the site is isolated the comparative advantages and disadvantages of the various available alternatives must be considered, such as, for example, the use of:—

(1) A steam pumping plant.
(2) A coal gas-engine plant.
(3) Dowson gas plant.
(4) Oil engines.
(5) Compressed air supplied from a distant station.
(6) Electric power.

Cost of Underground Water.

The cost, under ordinary circumstances, of procuring an underground supply, including payment of capital charges on works and working expenses, will in all probability be from about 3d. to 4d. per 1,000 gallons delivered through a 100 ft. lift to the surface, if the plant is used to its full working capacity.

Law Cases.

District Surveyors and Temporary Buildings.—Messrs. W. Densham & Sons, builders, of St. John's Wood, N.W., were summoned at the Westminster Police Court recently by Mr. Dru Drury, district surveyor for Westminster, for beginning a work before sending a building notice as required by section 145 of the London Building Act, 1894. The structure in question was a sort of block of seats put up in Westminster Cathedral for the purpose of the production of a piece, "The Dream of Gerontius," at the beginning of last month. The section of the Act laid it down that where a building or structure was about to be begun the builder was to serve a notice on the district surveyor before he commenced the work, and the Act also provided for a penalty if he failed to serve that notice. In the present case notice had not been served, and, briefly, the question for his worship was whether a builder could get out of the obligation to serve a notice because he had put up a structure inside instead of outside a building. Mr. Horace Smith, after looking at the case of *Venner* v. *M'Donnell*, where it was decided that the seats at the Agricultural Hall were a part of the equipment of the building, cited by counsel, said he thought he was bound by it. He regarded the present case as indistinguishable from the other. The summons would therefore be dismissed.

Submitting Plans to District Surveyors.—A test case of importance under the Gosport building by-laws was decided by the Gosport magistrates recently. Mr. Henry Daniells, builder, was summoned by the district council for building houses in Burnett Road without depositing plans. Briefly, the facts were that plans for two houses were approved by the council, and subsequently Mr. Daniels decided to continue the row with six more houses of a similar design. Of this decision he advised the council by depositing block plans, with the intimation that they would be according to the plans previously deposited and approved. He then proceeded to build. On his behalf it was argued that this complied with the by-laws, but Mr. Palmer (clerk to the council) said that complete plans, showing all details and sections, should have been deposited with the council for approval.—The chairman, Admiral Field, said that he agreed with the view taken by the defendant.—Mr. W. H. Fry, a former surveyor to the council, contended that the council had no right to keep plans, and that, had the surveyor to the council handed to him the plans of the first pair of houses, so that he could have annexed the notice and the block plans of the additional houses to them, that would have been sufficient. He never objected to that course while in the office.—The Chairman stated that it was a storm in a teacup, but the magistrates had to uphold the district council in their interpretation of the by-laws, and fined defendant 1s. and the costs, 9s.

PUBLIC HEALTH CONGRESS.

THE Annual Congress of the Royal Institute of Public Health was opened on Tuesday, July 14th, at Liverpool. The president, the Earl of Derby, in his opening address said in these days an increased duty was laid on them by the tendency of the population to congregate in towns. He was not going to deplore that tendency. The point was to provide better conditions for them wherever they were. Contrary to the general opinion, contrary to statistics, he doubted the halo of healthiness thrown over the country. No doubt country life appeared ideal, but if they followed it out in detail in times gone by they would find that life in the best cottages was infinitely inferior to anything in the worst slums of the towns now. It was not the case—they knew it painfully—that water was better than in the towns or more abundant. Building regulations were doing much, and might do more, but there was a time when any hovel or hut sufficed for the peasant, though no better than the dwelling of the savage, and fulfilling no single condition of present-day sanitary requirements. On this question of town and country much could be said—at least, he thought much could be said—on both sides; that where towns were bad, the country was far behind them. To his mind the great redeeming point of the country was that there was light and air. Those two attributes were of the most important assistance to the cause of sanitation. Old towns with narrow streets and alleys that excluded air had had their day. They now found that municipalities were conscious of their duties, and were actuated by a desire to bring better conditions of health, light, life and space into the towns they administered. The questions of open spaces, good drainage and good water were of paramount importance. Corporations should not stretch their powers too far. Lord Derby then made the presentation of the Harben Medals for the years 1901 and 1902 to Sir Charles A. Cameron, C.B., M.D., F.R.C.P. Ireland, and Prof. William R. Smith, M.D., D.Sc.

The Housing Question.

The section dealing with the questions of rehousing of the dispossessed and the sanitation of congested areas met on Wednesday, under the presidency of Mr. Austin Taylor, M.P.

The President said the housing question was one of the most important with which that section or, indeed, the whole congress had to deal. It was a problem still in its initial stage, the evils recognised, but the remedies yet to be discovered. Generally, much time was occupied in depicting the evils and difficulties, and not so much in the suggestion of practical remedies. In all cases where municipalities who had to deal with congested districts the work should be mapped out in advance, for at present enormous waste took place through lack of a settled plan and want of cohesion between corporation departments. In practice, the dispossessed tenants of slums did not, as a rule, occupy the new houses, firstly, because the rents were too high; and, secondly, because demolition frequently took place before the new property was erected. It was highly important that slum dwellers, when not a criminal class, should be induced to go to the new houses by means of low-rented places provided in advance.

Dr. James Niven, medical officer of health for Manchester, then read a paper on "Re-housing the Poor on the Outskirts of Large Cities." A great impulse had already been given to the movement outward by the development of electric trams, enabling people to live at some distance from their work, but it would still remain necessary to make provision of sanitary dwellings for a large number of persons obliged to live near the centre, and the scheme of the Liverpool Corporation in this direction, he thought, was bold and judicious.

Dr. J. Spottiswoode Cameron, medical officer of health for Leeds, contributed a paper on "Methods of Dealing with Unhealthy Areas." He said a most important scheme was being attempted in Leeds About 75 acres of land covered with houses and other property were scheduled by him in 1895. The Corporation resolved to deal with it in detail, and while adopting the representation as a whole, proceeded to form a scheme for about 16 acres. Powers were obtained after a hard fight.

Mr. T. T. Turton, deputy-surveyor, Liverpool, read a paper on "The Housing of the Dispossessed," in the course of which he gave a historical resumé of the Liverpool scheme. Since 1864 there had been 8,000 houses demolished under the Act, and about 4,000 for trade and other purposes, and there were 9,900 houses still to be dealt with. Up to the present the cost of demolition had been £400,000. For many years the displacement of population was not felt, but in 1899 it was found that from 1885 up to that year only half the dispossessed had been accommodated, and there was a deficiency of 3,056, although the houses built included 125 tenements at St. Martin's Cottages, Victoria dwellings 270, and Juvenal dwellings 101 tenements. The deficiency had now been nearly made up. There were in course of construction 176 one-roomed houses (2s. a week), 642 two-roomed (3s.), 738 three-roomed (4s.), and 140 four-roomed (5s.); a total of 4,234 rooms, to accommodate over 8,000 persons. Taking the total cost of demolition and housing, he said the loss last year amounted to 1s. 3d in the £, including sinking funds.

Mr. S. Reeves, Liverpool, said they had agreed to spend about £1,000,000 on the house schemes, and, after ten years, there were now fewer habitable houses than there were then. So long as the council went on buying insanitary property at big prices, instead of leaving them to be closed under the Public Health Act, this condition of things would continue

Baillie Brown, Edinburgh, said in Edinburgh they did not go to the Local Government Board, who, in England and Ireland, were impeding progress. But they bought a lot of property at five years' rental. They built new houses at 5d. a cubic foot, and were able to provide houses at low rents for the very poor.

Infectious Diseases Hospitals.

On Friday Mr. Shelmerdine, city surveyor, Liverpool, read a paper on "Emergency Hospital Construction and Accommodation." He described in detail a wooden emergency hospital for the accommodation of forty-two patients. The plan consisted of two long wards, 124ft. by 26ft., twenty beds in each, with sanitary annexes. Between these wards was the administration block, an inner hall (entered through a vestibule) from which opened the nurses' duty-room, which also served as hospital kitchen. On each side of the duty-room was a small isolation ward with one bed. Observation windows overlooking all four wards from the duty-room were provided. The floor space allowed was 156 sq. ft. for each patient, and the air space 2,000 cub. ft. The axes of the pavilions were north and south in order to give the maximum of light and air. The walls were covered outside with asbestos canvas, and inside with asbestos sheets; the roof was also covered internally with asbestos sheeting. This building could be erected in twenty-seven days, but the pavilions were as comfortable as those of permanent hospitals, and the structure had a life of about thirty years.

Professor W. J. Simpson, M.D., F.R.C.P. (London), contributed to the discussion a paper on "Infectious Hospitals and Return Cases." He said there was no objection to the aggregation of patients in one building; the objection was to their aggregation and treatment in wards; and he proceeded to argue from statistics that the proportion of return cases under such a system must of necessity be unsatisfactory. He contended that the separate cubicle system was the most consonant with rapid and complete recovery, and that it must be the system of the future for these cases.

Dr. T. W. N. Barlow (medical officer of health, Bootle) contributed a paper on "Requirements in regard to Underground Bakehouses." He said that quite lately the Home Secretary had declared that it was the deliberate intention of the Government to close underground bakehouses, and he had refused to consider the question of compensation. The requirements not involving structural alterations were: — Smoothness of walls and ceilings; provision of wash-basin and clothes' rack outside the bakehouse; no coal nor flour, nor anything likely to cause dust, to be stored in the bakehouse; provision of castors for furniture, and absolute cleanliness everywhere; efficient lighting; back cellar (when there was one) to be made as clean and light as the bakehouse itself.

Engineering Section.

At the last meeting of the Engineering section, under the presidency of Professor Hele Shaw, a paper was submitted by Mr. T. Molyneux, of Liverpool, on the subject of "Mechanical Road Vehicles for Public Works." The speaker pointed out that the more extensive use of motors would tend to greater cleanliness. He alluded to the influence of the Liverpool Self-Propelled Traffic Association in advancing motor carrying. The Corporation of Liverpool had seven heavy motor vehicles in use. The first was obtained in the early part of 1899. The vehicle was designed to carry four tons under the three-ton tare limit. The boiler is vertical, and burns ordinary paraffin to generate steam, this driving a pair of vertical engines, the transmission being by chain through reduction gear. The cost of working was about 8d. per ton per mile on the average. This vehicle is now doing valuable work in street watering in the summer, a considerable saving over horse haulage being shown; and apparatus is fitted for street gravelling in the winter. For refuse collecting and loading it would be found advantageous to group motors and to concentrate as many men as possible for loading purposes.

Construction of Carriageways.

Mr. F. E. Cooper, assistant city engineer, Liverpool, read a paper on the "Construction and Maintenance of Carriageways." He pointed out that the various classes of paving differed only a little from what had existed for many years in Liverpool; but in one or two respects modifications had been introduced. Concrete foundations were composed of crushed clinker, instead of fine gravel and broken stone, which gave expediency, economy and solidity. The system of grouting the joints was also changed by adding to the prepared pitch and creosote oil hot sand or fine gravel at a temperature of about 300 degs. Fahr. Experiments were still being made, the results of which were encouraging. With regard to macadam roads, asphalt macadam was again being largely used, and it was very strong and lasted as long as there was stone left in it. In the wood-paving there was a tendency to "rise," but the arrangement of counteracting this "creeping up" had met with considerable success. Among other classes of paving which were doing good work were compressed asphalt, mastic asphalt, sanitary paving blocks and basalt paving blocks.

Correspondence.

Buildings to Measure around Kendal.

To the Editor of THE BUILDERS' JOURNAL.

LEEDS.

SIR.—On page 311 of your issue for July 8th, I notice a reply to an enquiry *re* buildings to measure around Kendal which is scarcely correct. Knowing the district extremely well I should like to give fuller information. Kendal parish church is a magnificent example of a plain Perpendicular church, having five aisles, and with one exception is said to be the widest in England; inside are three chapels divided from the church by good oak screens, one of which I myself measured and sent in for my own intermediate examination R.I.B.A. One chapel contains the monuments of the Parrs, the the family to which Catherine Parr belonged, and another belongs to the Stricklands of Sizergh Castle, a few miles distant, and well worth a visit. Levens Hall (Heversham Station), 5 or 6 miles from Kendal, is very well known, and should provide many subjects, some of the Renaissance woodwork being extremely fine. It is, I believe, open on Thursdays, but the owner might be written to (Major Bagot, M.P.) for fuller permission. Should your correspondent be a cyclist he can visit the above en route for Cartmel Priory, about 1½ miles from Grange Station (cheap tickets from Kendal), or about 12 or 15 miles by road via Levens and Lindale. Here is any amount of magnificent Norman, Decorated and Perpendicular work, and the choir screen and stalls have far more than local fame and would be a splendid subject for the R.I.B.A.—Yours truly,

H. E. ILLINGWORTH, A.R.I.B.A.

Obituary.

Mr. Thomas Gregg, aged seventy-three, builder, of 57, Handbridge, Chester, died recently.

Mr. Richard Burton, of Aucuba Lodge, St. Giles, Norwich, died last week at the age of sixty-nine years. Deceased was formerly builder to Messrs. Youngs, Crawshay & Youngs, brewers, and of late years had been living in retirement.

The late James A. McNeill Whistler married the widow of Mr. E. W. Godwin, the noted architect. Whistler devoted himself almost entirely to the graphic arts, but as a draughtsman of architecture his loss will be deeply felt by every lover of architecture.

Sir John Hutton, of 7, Kensington Court, part proprietor of the "A B C Railway Guide" and "Sporting Life," formerly editor and proprietor of the "Weekly Times," and for three years Chairman of the London County Council, of which he was one of the original members, who died on the 31st May last, left an estate of the gross value of £52,350, with nett personalty £34,251. Among other legacies, Sir John Hutton left one of £200 to Mr. Allan O. Collard, architect, of Buckingham Street, W.C., who was for some years in the employ of the London County Council in the Architects Department.

INSTITUTE OF SANITARY ENGINEERS.

THE provincial summer meeting of the Institute of Sanitary Engineers was held last week in Wolverhampton and extended over three days.

On Tuesday morning the Mayor of Wolverhampton (Alderman G. R. Thorne) welcomed the members in the council chamber. After preliminary remarks Mr. W. J. Dibdin, F.I.C., F.C.S., &c., president of the Institute, read a paper on "The Theory and Practice of Filtration."

Filtration of Water.

Mr. Dibdin, in tracing the history of filtration, said: The first scientific and practical method of treating hard waters especially is that of Dr. Thomas Clark, who in 1841 patented his famous method of softening water by adding lime water to the hard water in sufficient quantity to absorb the carbonic acid which holds the carbonate of lime in solution. As soon as the excess of acid is thus removed, the lime in the water, as well as that put in and now combined with the carbonic acid, settles to the bottom of the containing vessels, and in doing so carries with it practically the whole of the impurities in the water. The process is one of the most simple and beautiful methods of treating water which has been brought before the public.

It is often claimed for filters that they will remove living organisms as well as the ordinary impurities. Up to a certain extent this is true, but by no means entirely so, more especially in relation to the bacteria. When we consider the conditions of the case we shall understand better how a filter will, under suitable circumstances, allow organisms of various sizes to pass through, and, in fact, to live and multiply in it, with the result that after a time such a filter may become a perfect aquarium in itself.

In reply to Mr. Peers, who said he did not think there was that necessity for domestic filtration in the provinces that existed in London, Mr. Dibdin recommended the high-pressure supply. Years ago he remembered the dreadful state into which cisterns got, no matter how pure the source from which the water originally came. It was no uncommon thing to find rotten boots and dead dogs in the cisterns, and in one case a dead man even was found in a cistern. It was this horrible state of things that brought about reform.

Treatment of Sewage.

On Wednesday Mr. J. Ashton, of the Hacken Sewage Works, Bolton, read a paper on "The Collection and Utilisation of Excreta in relation to Sewage Treatment." He contended that the water-carriage system embodied a huge national waste. By hurrying fixed nitrogen down the drains and watercourses to the sea a loss of no less than £16,000,000 per annum was sustained. Mr. Berrington opened the discussion on the subject, and said he was totally opposed to the views of Mr Ashton. He contended that the pan system was the most extravagant and insanitary that had ever been introduced into a civilised country. The theories set forth in the paper were impracticable in a crowded town. In his opinion, the introduction of the water-carrying system had reduced illness and the death-rate. Mr. S. Lloyd was convinced that the pail system was a vile one. He would like to see it abolished in Wolverhampton. Mr. Peers (chief sanitary inspector for the borough) expressed his surprise that any man should desire the continuance of so foul a system as had been suggested. In reply to the criticism Mr. Ashton explained that his remarks were intended to apply not to large centres of population but to small towns and country places.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Cost of Factory.

LEEDS.—C. P. G. writes: "What would be the approximate cost of a brick factory three storeys high, having a frontage of 38ft., depth 30ft., and lighted on both sides of the 38ft., built with iron or steel girders; the building to be well lighted, leaving as much room as possible for windows, and with an 11ft. projection on the ground floor built of glass and iron (frame) similar to a 'lean-to' greenhouse?"

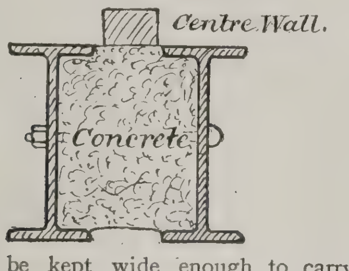
The total height of the factory or of the three storeys required is not mentioned. The cost depends considerably on local conditions, such as the foundations which may be necessary, nature of the design, and other similar items. Under ordinary circumstances a factory of a plain character, without machinery and fittings, will cost from 5d. to 6½d. per foot cube, but cotton factories in Lancashire have been erected from 4d. per foot cube. A glass structure 38ft. long and 11ft. wide, similar to a lean-to greenhouse, with brick base, upright side lights, movable upper lights, concrete floor, &c, will cost from £100 to £160 according to the height of the structure and description of the finishings.

T. E. C.

Carrying Wall and Chimney Breasts on an Upper Floor

HULL.—STUDENT writes: "Please show the best method of carrying wall and chimney breasts on an upper floor when the wall and fireplace below are removed."

From the sketch sent (not reproduced) you appear to contemplate a somewhat risky treatment of a half-brick wall. If the bricks are good and the mortar and bonding good it may be done, but not in the way you suggest. I would advise two girders placed side by side, tied together with a couple of bolts (spaced to divide the length into three parts) and filled between with concrete, as shown in the accompanying sketch. These may be kept wide enough to carry the breasts. You will need to be very careful about shoring and supporting while getting in the girders: you should carefully calculate the weight and see that it is properly distributed on the wall where the girders bear, and that it is also properly distributed on the foundation. You should not expect an existing wall to bear every additional weight that may be put upon it. In a work of a similar kind which I am just doing I find it necessary to put channel irons, for pillars, against the walls at the bearings of the beams: and these pillars rest on short pieces of girder which distribute the load on blocks of concrete specially put down as foundations.



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Schools.

MIDLANDS.—IGNORAMUS writes: "In planning an elementary mixed school for 300 boys and 300 girls with a central hall, should the hall be made large enough to hold 600 or only 300? The 'rules' published by the Education Department are not very clear on this point, although they state that the hall is to be for the joint use at separate times. Also, in an infants' school for 400 what should be the proportion of the babies' accommodation? Is there any fixed proportion, such as a quarter or a fifth? Nothing is said in the rules as to this."

Assuming that the school is to be planned on one floor, the accommodation named would at least require ten classrooms, sixty in each. The Board of Education do not lay down as an essential that a central hall shall be provided, but it is now general to plan all schools with one. In this case I do not see that the school could be arranged in an economical working manner with a hall of less dimensions than, say, 75ft. by 30ft. This would allow all the children to assemble at one time. I have always planned my schools with the idea that the hall, when a school is not more than one storey high, should be large enough to accommodate the whole of the children, and always read the rules of the authorities as meaning this. There is no fixed proportion for babies' accommodation in infants' schools. In poor districts parents often send their children to school at a very early age, leaving themselves free for their day's work. A higher proportion would therefore be required in such a case than in a better class district. It has been my practice to provide in schools of 500 infants two babies' rooms, each holding fifty, giving a proportion of one-fifth.

S. J.

Borings for Water-supply in Sussex.

BRIGHTON.—RUTHRA writes: "A boring for water to a depth of more than 160ft. was made some years ago at a certain house in Sussex, but was at that point abandoned. Advice says that water might have been obtained at a lower depth. The stratum is Wealden clay, and the site is very near a river. Does any book give general information bearing on the subject, and can any opinion be formed of the possibilities or probabilities in this particular case other than by applying to various boring firms, whose advice, though cautious, might possibly be a little affected by their interests?"

The most useful information on the subject of underground water in Sussex will be found in a "Memoir" of the Geological Survey Office, entitled "The Water Supply of Sussex from Underground Sources" (price 3s.), wherein are given details of a number of borings in Sussex and the approximate yield therefrom. If such details can be obtained of an existing boring in the immediate neighbourhood of the site in question, this will afford the most reliable data upon which to form an opinion in reference to the present case. It is impossible, in the absence of information from existing borings as to the thickness of the Weald clay at this site, to give any idea of the depth at which the Hastings beds would be reached. Of these, the Tunbridge Wells sands and the Ashdown sands usually contain a limited supply of water of a more or less chalybeate nature. The geological order of succession of the beds and the probable maximum thickness is as follows:—

	Feet.
Weald clay - - -	1,000
Tunbridge Wells sand -	140 to 380
Wadhurst clay - - -	120 to 180
Ashdown sand - - -	400 to 500

It is very probable that water would be found in the Tunbridge Wells sands, but the yield is not likely to be large. We recommend a careful perusal of the publication above-named, and also the paper on the subject of "Underground Water Supplies" recently read by Mr. W. H. Maxwell, A.M.I.C.E., before a meeting of waterworks engineers at the Agricultural Hall, Islington (published on p. 340 of this issue).

Keeping Street in Repair.

BANGOR.—W. G. W. writes: "The Corporation have recently adopted the Private Streets Improvement Act, and have now sent notices to the owners of a certain street to put it in repair according to the plans, &c., prepared by the borough surveyor; and the cost will no doubt be an exorbitant one. The street lies between two main streets, joining which two streets runs a very steep hill, and in order to get from one main road to another the public have for the past forty years used the street in question, in order to shorten the way, and also because it avoids one-half (much the worst half) of the steep hill, which is a public road. A few years ago one of the owners asked the present surveyor to do some repairs to this street, when he replied that it was a private street, and he could not do so. However, about seven or eight years ago, at the request of another tenant of one of the houses, he carted six or seven carts of macadam on it, and had two or three men for a couple of days putting it right and level. Did not this street, by the action of the borough surveyor at that time, become a public street according to the Act?"

The Corporation appear to be quite correct in their contention that this street is not a public street within the meaning of the Act.

T. E. C.

A Party Wall.

MERE, WILTS.—W. Z. writes: "A has asked me to pull down a place joining B. B has no end of his own, but has an old-fashioned fireplace built against A's end, and the fireplace terminates with a chimney built on A's end of house. Can A take away the end of his house and leave B's house open?"

It is extremely likely that the wall you refer to is a "party wall," and therefore belongs partly to B, if this is not so I fail to understand how B's chimneys are built! You show a chimney to A's property, but none to B's, though you have sketched (sketch not reproduced) a fireplace in the latter's house. But even if this is not the case and the wall is entirely A's property as you describe it, B has a right to the use and support of it, and A cannot remove it and leave B's rooms open to the air. The correct action for A to take in the matter is to tell B exactly what he proposes to do and to get his approval of the alterations—in writing if possible. I conclude that A is proposing to rebuild his premises. If not, then he must leave the end wall standing, though no doubt it will be very unsightly.

G. S. M.

BLACKPOOL.—BERT writes: "The sketch (not reproduced) shows a party-wall which separates property owned by two separate owners A and B. B's owner has cellared his property since the building was completed, and in doing so has merely built an offset to the party-wall, not underpinning one-half of the wall, but leaving the clay straight with the foundations and setting out 13½in. brickwork from it; the ground is good solid clay. A now proposes to cellar his property, and on excavating under the party-wall finds out what B has done. A has notified B to this effect, but B declines to take any notice further than saying that he will hold A responsible for all damage done to the wall. He maintains that if A would build out as B has done the wall would be safe. Do you think it advisable to build the required 4½in. under A's portion and risk what becomes of B's 4½in.? Will A then be responsible? Or would it be better for A to build the whole 9in.?—which he does not mind, so as to make a good job; but to do this I presume he would have to get permission from B to encroach upon this land. Do you think it advisable to build out as B has done? The length of the cellar is 17ft.'

We consider that A's best course is to underpin the whole of the party-wall after obtaining B's permission to do so. The underpinning should be carried below the floor-line of the cellar. If the ground is hard compact clay, not affected by rains or weather, it is probable that a carefully built brick offset (similar to that constructed by B) would suffice, but we prefer the underpinning method already mentioned. A is responsible for any damage which may occur from his operations; in the same way that B was previously liable for any damage or settlement which might have been directly traced to his interference with the original foundations of the party-wall.

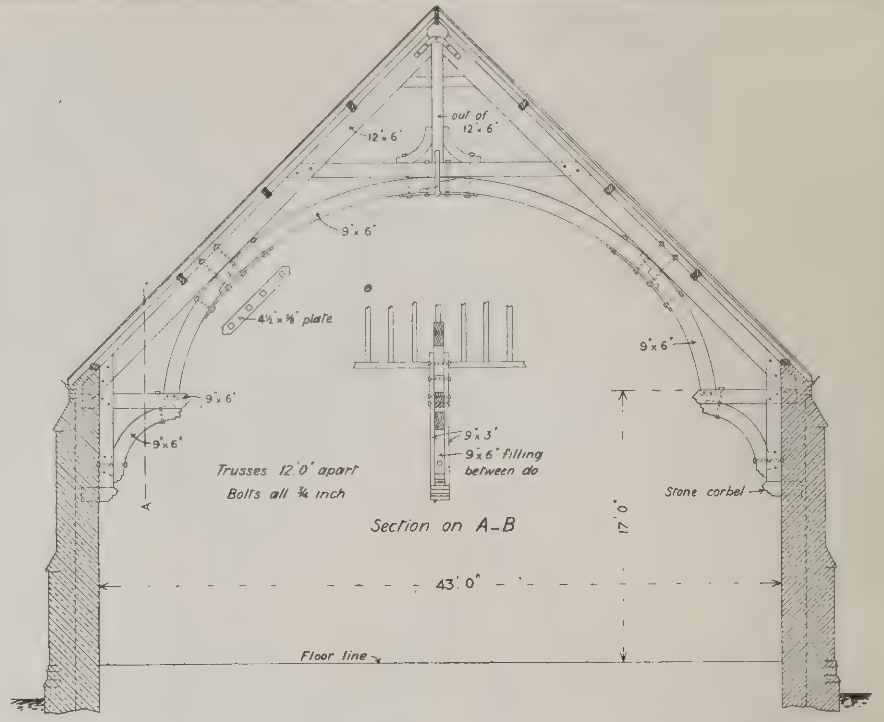
T. E. C.

A Hammer-Beam Roof-Truss.

Sunderland.—Architects write: "We send you a sectional elevation of a roof-truss which we propose to erect over a span of 43ft. Will you kindly tell us whether you consider the construction sound, and if so what in your opinion should be the scantlings of the timbers. The height to the top of wall-plate is only 17ft., and so we are anxious to get as much open space in the roof as possible, and with this object we propose that the roof should be entirely open to the underside of the covering."

The accompanying design based upon the tracing forwarded shows the scantlings that may be adopted, together with the ironwork for connecting the parts.

HENRY ADAMS.



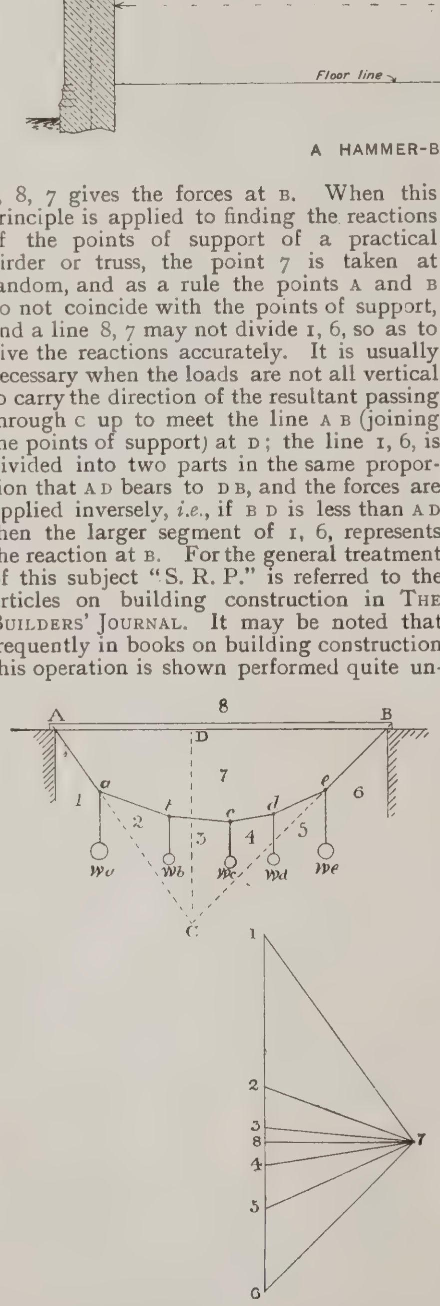
A HAMMER-BEAM ROOF-TRUSS.

Graphic Statics.

London, W.—S. R. P. writes: "Please give me a proof of the construction so commonly used in graphic statics; that the resultant of the five parallel forces shown in sketch (not reproduced) has its line of action in the dotted line."

Let "S. R. P." take a piece of wood, say 4ft. long 2in. wide and 1in. thick: let him either bore holes or make notches at the ends A and B, so that he can fasten a string to it having knots and strings as shown in the figure: now let him support the piece of wood at its ends A and B, as shown, and let him attach weights *a*, *b*, *c*, *d* and *e*, as shown; the system will take a figure like that shown. If the lines A *a*, B *e* are produced to meet at C, it will be seen that a weight at C hanging from a cord A C B may produce the same force effect upon A B and its supports as the five weights, because the forces acting on A B remain unchanged in direction. If we consider the reaction of the supports, these are together equal to the sum of the weights, therefore, the weight at C must be equal to the sum of the weights, and a vertical line through C is the line of action of the resultant of the forces *a*, *b*, *c*, *d* and *e*. Measure the depths of *a*, *b*, *c*, *d* and *e* below A B, and the horizontal distances from either support, so that you can plot the polygon; make a stress diagram of it: draw the triangle of forces about the knot *a*. You know weight *a*, therefore you can find the stresses in A*a* and *ab*. Now, if your measurements are correct when you draw the triangle for the knot *b*, the stress found for *a b* must be the same as you found for *a b* in the first triangle; the result of each successive pair of triangles having a common side is that all the triangles have a common vertex, as is found to be the case (see stress diagram). I have assumed the forces acting at the knots of the cord to be parallel vertical forces, because this is "S. R. P.'s" question; if, however, they are not parallel, the construction still holds, but in that case 1, 2, 3, 4, 5, 6 are not in one straight line, and their resultant is found by joining 1 and 6. The triangle 1, 8, 7 represent the forces at A, viz., 1, 8, the reaction of the support 1, 7, the tension in the string A *a* and 8, 7, the thrust in the stick A, B; similarly the triangle 6, 8, 7 gives the forces at B. When this principle is applied to finding the reactions of the points of support of a practical girder or truss, the point 7 is taken at random, and as a rule the points A and B do not coincide with the points of support, and a line 8, 7 may not divide 1, 6, so as to give the reactions accurately. It is usually necessary when the loads are not all vertical to carry the direction of the resultant passing through C up to meet the line A B (joining the points of support) at D; the line 1, 6, is divided into two parts in the same proportion that A D bears to D B, and the forces are applied inversely, *i.e.*, if B D is less than A D then the larger segment of 1, 6, represents the reaction at B. For the general treatment of this subject "S. R. P." is referred to the articles on building construction in The Builders' Journal. It may be noted that frequently in books on building construction this operation is shown performed quite unnecessarily. Students are cautioned against wearing themselves out in trying to understand things which have been thrown together by compilers totally ignorant of the matters they took in hand. The connections of the fragments are in many cases not comprehensible to anybody.

P.



Architects' Charges.

Fareham.—Architect writes: "What would be an architect's reasonable charges for the following works:—(1) Plans, surveys and levels of site, sections, specifications and detail drawings, quantities, tenders invited. Lowest tender considered too high. Conference with contractor presenting lowest tender. Scheme finally abandoned by owner. Lowest tender £1,500. Lithographer's and other expenses. (2) Plans and sections (no specification) of existing building; work done by owner personally under supervision of architect. Cost about £800. Architect prepares designs and arranges for supply of furniture, cost about £400; work carried out. (3) Preparing plans, sections and specifications of work. Tender £2,000 accepted. Contractor fails. Plans and specifications for a contract for remaining portion of work. New contractor called in who finishes the work for £1,500. Numerous interviews with official receiver. (4) Survey and levels of site, plans, specifications and detail drawings of new buildings, quantities prepared, tenders invited, lowest tender rejected. Lithographer's and other expenses. A few months afterwards owner carried out the work by himself, but in a modified form."

(1) 3 per cent for plans, specifications and obtaining tenders on £1,500. In addition, charge for preparation of quantities according to time and difficulty of work. Also add expenses and cost of lithographing. (2) On a small job of £800, including supervision by architect, a fair charge would be 50 guineas. For designs for furniture, &c., costing £400, you should charge according to its elaboration, say 30 guineas. (3) You are entitled to 5 per cent. on amount of contract, £2,000, plus charge for time and trouble entailed in consequence of contractor failing. (4) There is no special rate for such work; you should charge according to time involved, nature of work and expenses, with lithographer's charges, &c.

NOTICE.—The present volume of "The Builders' Journal" will end with next week's issue, and the following volume with the issue for December 30th; so that in the future there will be two volumes extending equally throughout the year.

LONDON STREET TRAFFIC.

LAST week a sitting of the Royal Commission on Transport and Locomotion in London was held.

Mr. Maurice Fitzmaurice, chief engineer to the L.C.C., was called to give evidence. In speaking of obstacles of locomotion Mr. Fitzmaurice said the breaking up of streets for laying and repairing pipes created a serious difficulty. Water, gas and other companies could now break up the streets whenever they wished on giving notice. In his opinion some controlling authority ought to be able to give these companies notice when they could break up any streets, and except during that time the streets should not be broken up unless in case of emergency. There were in London, under the control of the L.C.C., fourteen subways for water and gas mains, electric light and other cables of an aggregate length of 5½ miles. A subway 12ft. by 8ft. would cost about £18 per yard run for construction, or nearly £32,000 per mile.

Another great obstacle to locomotion is the holding of markets in streets. They certainly ought to be prohibited in all main streets, unless those of quite exceptional width. There ought to be some regulation as to carts standing outside railway receiving offices, large places of business, and places where building operations were going on. He failed to see why private firms should be allowed to monopolise the carriageway in this manner. Proceeding to speak of cross-river communications Mr. Fitzmaurice said the L.C.C. proposed to commence the construction of a tunnel between Rotherhithe and Wapping. The total cost would probably be about £2,000,000. The reconstruction of several bridges would have to be dealt with in the near future. The widening of Waterloo Bridge, or the construction of a new bridge between Waterloo and Blackfriars, was urgent. He himself would much prefer an additional bridge.

Eventually a new street from Piccadilly Circus eastward would have to be considered. With reference to north and south connections, certain proposals for new roads had been considered, amongst which might be mentioned one from the Crystal Palace district to Waterloo Road, near Waterloo Station, and then continued across the river by a new high-level bridge between Waterloo and Blackfriars Bridges. One branch of the new street might then fall to meet the eastern crescent of the new Holborn to Strand Street, and another branch might continue north by a bridge over Fleet Street, between Chancery Lane and Fetter Lane, from which point it might be continued to the county boundary. Rough estimates had been made as regards the cost of such a street from the Strand southwards to the county boundary, near the Crystal Palace. Three types of streets had been taken. Type A was a street 150ft. wide, consisting of footpaths of 20ft. on each side; the central portion of the street, 30ft. wide, to be reserved for motor and other quick traffic; while on each side of the central part would be a width of street of 40ft. for surface tramways and slow traffic. Underneath was a subway for single-decked tramcars, and there were the usual pipe subways and sewers. Type B showed a street 100ft. wide, with two footpaths, each 14ft. wide, and a roadway of 72ft. Underneath was a double subway for both quick and slow tram traffic, and there were pipe subways and sewers as in type A. Type C was, as regards the surface of the street, the same as type A, but instead of placing the tram-cars in the shallow tramway they were carried in two tubes at a deep level. The pipe subways and sewers were as in the other types. The cost of these roads, including 150ft. of land on each side, was estimated at £2,560,000 per mile for type A, £2,400,800 per mile for type B, and £2,740,000 for type C.

Asked whether he had considered the question of providing subways for pedestrians, he replied that the existing subway crossings were not generally used. Among the subways for tramways which he thought might be constructed was one from Hammersmith Broadway to Piccadilly.

TRURO CATHEDRAL.

ON Wednesday last the nave and central tower of Truro Cathedral were formally opened in the presence of the Prince and Princess of Wales. The late Mr. J. L. Pearson, R.A., was selected as the architect of the cathedral in 1878. In May, 1880, the foundation-stones were laid by the King, then Prince of Wales. The erection of the choir, transepts, baptistery and a portion of two bays of the nave was completed in November, 1887. For nine years after the consecration of this part no special effort was made to continue the building; but the sudden death of Archbishop Benson, the first Bishop of Truro and founder of the cathedral, recalled the whole idea of the building to the public mind, and suggested its completion as a fitting memorial of one who had done so much for the Church. Money was again forthcoming, and building was resumed in June 1899, the designs of Mr. J. L. Pearson being faithfully carried out by his son, Mr. F. L. Pearson. The western portion of the cathedral now completed comprises the nave and aisles, with western double porch or narthex, south porch, and western towers. The architecture of the cathedral is Early English with characteristics of the buildings of the early part of the thirteenth century. Its walls are mainly built of Cornish granite, with serpentine from the Lizard for its steps and grey-tinted stone for the shafts of its pillars. Its sculpture, windows and monuments commemorate Cornish saints and other local benefactors. The nave is 112ft. long, 29ft. wide, and about 70ft. high. It is divided into four bays, and these are again subdivided so that the nave arcades consist each of eight arches. The main piers are circular with attached shafts and boldly projecting groin shafts on the nave side; the intermediate piers are elongated, much narrower, and with similar attached shafts. The general lines of the nave follow to some extent those of the choir. They have the same acutely pointed and richly moulded arcade arches and bold and very broadly treated triforia. The details of the design are, however, much varied, the arches of the triforia being filled in with a series of four pointed arches springing from detached shafts, and with a large cusped circular opening over them, suggesting incipient rather than developed tracery. The nave, like the choir, is vaulted in stone, but on a different plan. It is sexpartite, while that of the choir is quadripartite. The bays of the nave, 28ft. wide, intersected by massive transverse ribs, have a very bold and imposing effect as contrasted with the narrower and perhaps more refined treatment of the choir. The north and south aisles of the nave are 112ft. long and 14ft. wide in the clear of the arcade walls, giving a total width of nave and aisles of 62ft. The western bay of the cathedral is separated from the nave by a lofty arch, while over this western bay is a gallery which not only provides additional accommodation, but forms a base to the west end internally and adds much to its effect. The west end is perhaps one of the most imposing features of the cathedral. It differs from the majority of ancient cathedrals, either in this country or abroad, in that the western doorways are two, not three or one. They enter directly into the nave through a shallow narthex, and not, as is frequently the case, into the aisles through the western towers. These doorways are of lofty dimensions and are elaborately treated and recessed under gabled arches, the tympana being filled with sculpture. The western towers have not yet been carried above their second stage. The central tower, which is the crowning dignity of the cathedral, is square. The spire rises in simple and unbroken outline from a rich cluster of pinnacles and spire lights which are grouped around its base. The height to the top of the spire is 250ft.

Builders' Notes.

New Naval Barracks, Portsmouth, have been supplied by Messrs. E. H. Shorland & Brother, of Manchester, with a number of their patent Manchester grates.

Mr. Robert Boyle having acquired the whole of the shares of Robert Boyle & Son, Ltd., the well-known firm of ventilating engineers, will in future carry on the business under its original title of Robert Boyle & Son.

New York Building Strike.—Fifty thousand men have accepted the employers' terms and returned to work. The effect of these is to do away with the walking delegate. Provision is also made for the appointment of a Joint Arbitration Board to settle trade disputes. Many labourers and a large number of unskilled hands have resumed work.

Wallpaper in Roumania. — The British Vice-Consul at Galatz says in a recent report that most houses in Roumania are stencilled and not papered, but those of modern construction are not considered finished unless they are papered, and with designs which are pleasant to behold. British wallpaper designs are unknown. The supply comes from France, Austria-Hungary and Germany. No doubt with a little adroitness a demand could be created for this article, but this could not come about by simply posting samples and price lists (which British firms so often think is enough). This, like so many other goods, must be pushed and brought to the notice of the public as well as of the dealers in Roumania.

A New Railway between Yarmouth and Lowestoft, constructed jointly by the Great Eastern, Great Northern and Midland Railway Companies, was opened for passenger traffic last week. It is about nine miles in length. The new line passes through Gorleston, Hopton and Corton. The engineering works on the new line are of a somewhat heavy character. This is especially so at the Yarmouth end, where, in order to make their connection with the three companies' line, the Midland and Great Northern Joint Committee have had to throw a viaduct no less than 800ft. long over the continuation of Yarmouth Harbour known as Breydon Water, besides constructing smaller bridges over the River Bure and over the Great Eastern line from Norwich. The Breydon viaduct has been erected by Messrs. E. Finch & Co. from the designs and under the supervision of Mr. A. Ross, chief engineer of the Great Northern Railway Company, and Mr. W. Marriott, engineer to the Midland and Great Northern Joint Committee. It consists of five spans, one of which is a swing span having two openings of 60ft. clear waterway in order to admit the passage of ships and river craft. A special feature of the bridge is that the machinery for working the swing span is all in the turret above the pivot of the span, a gas engine as well as hydraulic machinery supplying the power for swinging the span.

Bricks and Mortar.

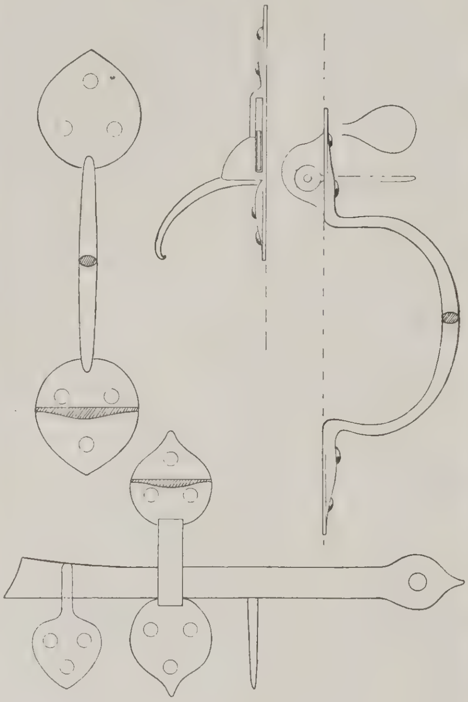
Aphorism for the Week.

I have not chanted verse like Homer, no—
Nor swept string like Terpander, no—nor carved
And painted men like Phidias and his friend:
But I have entered into sympathy
With these four, running these into one soul,
Who, separate, ignored each other's arts.
Browning.

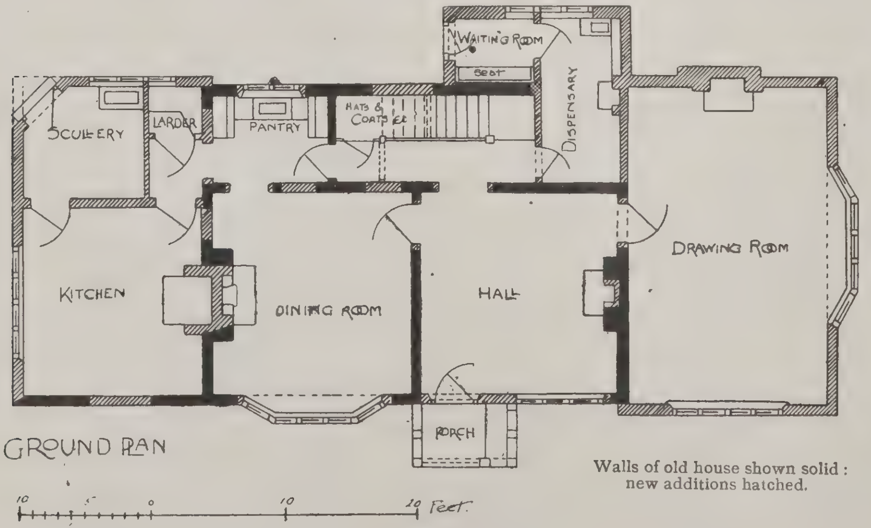
Our Plates. "The Paddock," Ruskington, for Dr. Thompson, is an old house added to and restored by Messrs. Brewill & Baily, of Nottingham; the plan below indicates the old and the new work. The accommodation provides a spacious entrance hall, dining-room, drawing-room, consulting-room, and kitchen, offices, &c. The exterior is constructed with red bricks up to the first-floor level, the upper part being covered with rough-cast and roofed with red tiles. The accommodation on the first floor consists of five bedrooms, with dressing-room, bathroom, &c. The work has been ably carried out by Mr. Frank Pattinson, builder, of Ruskington.—Mr. James A. Swan, of 56, Newhall Street, Birmingham, is the architect of the house at Edgbaston for Mr. W. A. Cadbury. The drawings show the alterations and additions of a new wing. Externally the walls are stuccoed similar to the old work and the roofs covered with green slates. Internally the hall, staircase and panelling are of oak. The metal fittings, door furniture, glass and other decoration were designed by the architect. The house is heated throughout by hot water. The work has been carried out at a cost of £4,500.

London Municipal Offices. The Select Committee of the House of Lords last week considered Local Government Provisional Order (No. 5) Bill, the object of which is to confirm provisional orders granted to the metropolitan boroughs of Hampstead, Holborn and Lambeth by the Local Government Board, and authorising these boroughs to acquire certain lands compulsorily for the erection or extension of municipal offices and buildings. There was no dispute as to the land being required or as to its being suitable for the purposes proposed. The London County Council opposed, in order to obtain the insertion of a saving clause preserving the operation of the Metropolis Management Acts and the London Building Acts. The promoters agreed that there was no intention of exempting the land from the provisions of the Building Act, and all the London County Council asked was that that should be made clear, not by possible litigation hereafter, which might be taken to the House of Lords but by the insertion of a simple clause in the Bill. For the Council it was denied that plans would have to be submitted to the London County Council. Ultimately, the Committee found against the insertion of the clause.

A Door Latch. A well-known architect writes:—I see on page 211 of your issue for May 20th a useful and instructive illustrated article on building construction. But is it not a pity that students should be instructed with such pitiful want of taste? Let the illustration of the thumb-latch be compared with the accompanying tracing. Here is a detail I have made from an old example, translating the outline of the original pattern freely to suit my own taste. I have had similar latches to these in use for many years, and know that they are quite practical and satisfactory. They can be procured from Mr. W. B. Reynolds, of 28, Victoria Street, S.W.



Discoveries at Beni Hasan. There is now on view in the rooms of the Society of Antiquaries, Burlington House, an exhibition of Egyptian antiquities discovered during the past season by Mr. John Garstang, Reader in Egyptian Archæology at Liverpool University College. Reference was made to these discoveries on p. 258 of our issue for June 17th. The site of Beni Hasan is about half-way between Cairo and Abydos, and the objects discovered—unlike those of Professor Petrie and his coadjutors now shown at University College—are attributed to one period only—the XIth and XIIth dynasties, or about B.C. 2200; and are for the most part illustrative of the ancient burial customs and industrial methods of the Middle Empire. They exhibit a considerable variety in artistic merit, and also furnish some evidence of the relations of this to neighbouring regions. Mr. Garstang found more than 100 tombs which had never been entered since they were closed about 4,000 years ago over their contents. One of the most remarkable objects is a model of a granary like those still in use, with holes in the top for the admission of the grain, and means in the perpendicular side for gradually letting out the grain. This illustrates, like the small hand-winnowing fans which are still in use among the Arabs, the continuity of habits and practices of the people in this wonderful country. The various callings of mankind are strikingly illustrated by the models of boats with the rowers, steering men and passengers, and it is remarkable that the steering apparatus is simply and economically worked with levers. The operations of brewing and baking are also shown in miniature. Figures portraying the sacrifice of an ox—made of wood, plastered and painted—are believed to be unique of their kind. There are, too, well-worked legs of chairs, quite like a piece of modern mahogany. The exhibition will remain open until Saturday, July 25th.



Walls of old house shown solid: new additions hatched.

"THE PADDOCK" RUSKINGTON, LINCS. BREWILL AND BAILY, ARCHITECTS.

An American Colosseum. A stadium of vast dimensions and classic design is to be built on Soldiers' Field, the Playground of Harvard College, on the banks of the Charles River. This structure will be shaped like a flattened horseshoe, or, to make a closer comparison, it will resemble a continuous stand following the two long sides of a football field and one of the short sides. But its dimensions will beggar those of any grand stand used for athletic sports. The length of the arena enclosed will be no less than 450ft., and the extreme length of the whole building as viewed from the road that crosses Harvard Bridge will not fall far short of 200yds. In other words, the stadium will be about equal to the Colosseum in length, but will afford a larger arena. At first sight the vision of an inflated football stand with a classical name suggests rather the modern circus than the ancient Colosseum. But the plans of the Harvard stadium have been prepared by Mr. McKim, and its design is as remarkable for simple elegance as for constructive ingenuity and economy. The framework will be of iron girders, the facing of concrete blocks. The vast iron skeleton within will be entirely concealed under a mask of yellow white that will present, with practically the same effect as solid stone, all the familiar aspects of a Roman amphitheatre. Tier upon tier of seats will rise to a height of 100ft., affording seats for 24,000 spectators on ordinary occasions, for 40,000 in an emergency. Behind and above the topmost row will run a roofed gallery supported on light pillars; this is designed to provide a sheltered promenade and to give a necessary architectural finish to the building as seen from within. The exterior aspect of the stadium will be on lines that the form of the interior makes inevitable. A colonnade of three super-posed galleries surmounted by a heavy cornice, unadorned by superfluous embellishment, will give simplicity and severity to the outward aspect of the building. The height being about two-thirds that of the Colosseum, the massiveness of the piers, or rather of the appearance of the piers, will also be somewhat less.

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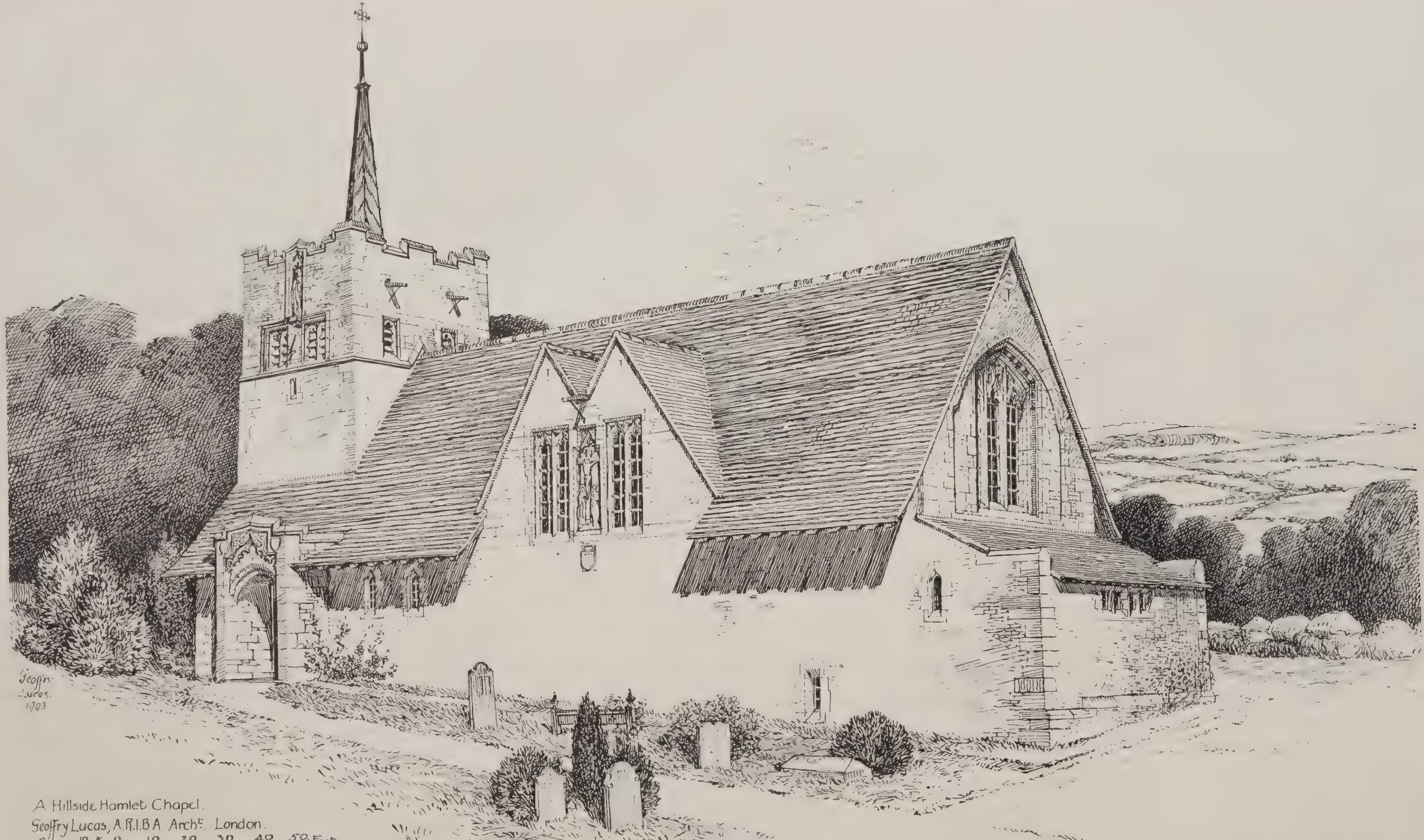
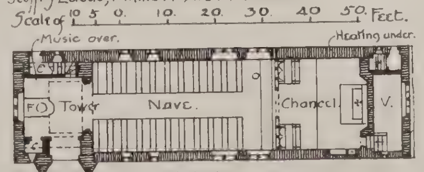


A Hillside Hamlet Chapel.
Geoffry Lucas, A.R.I.B.A. Archt. London.



PLAN.

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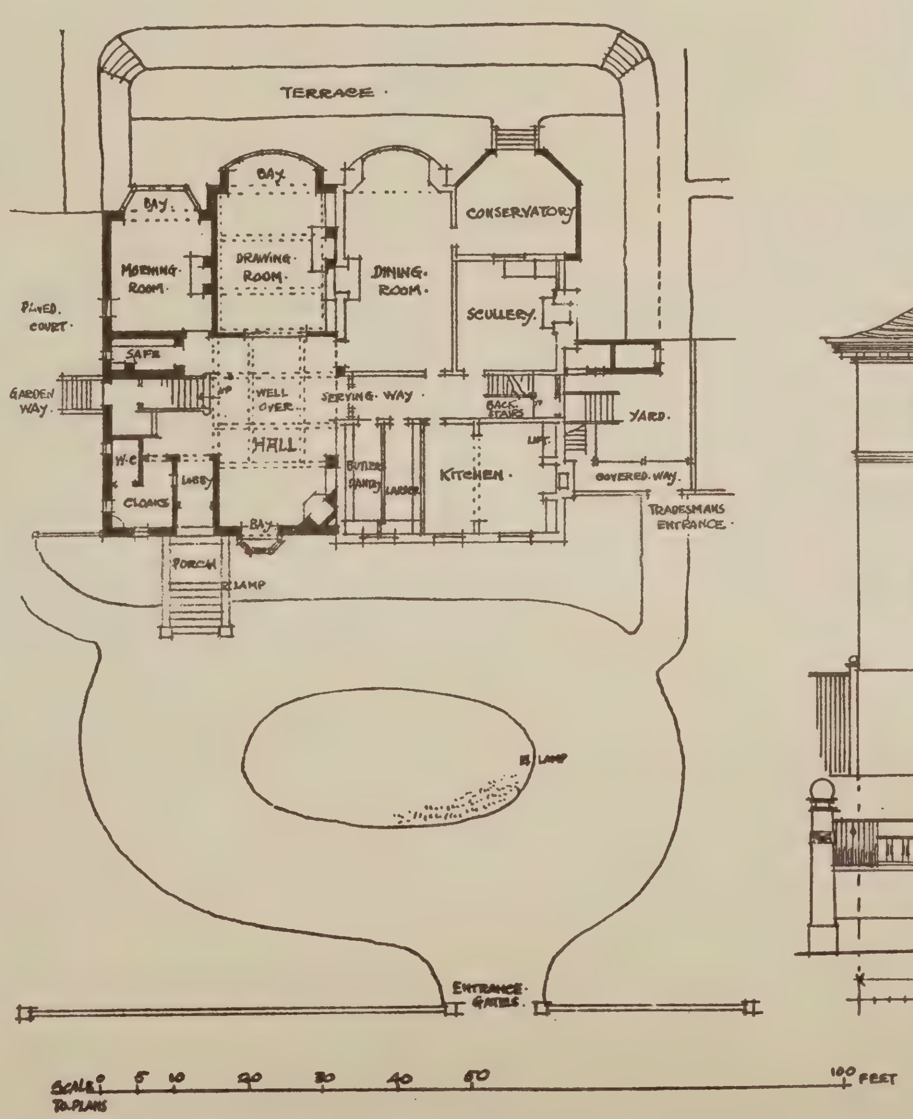

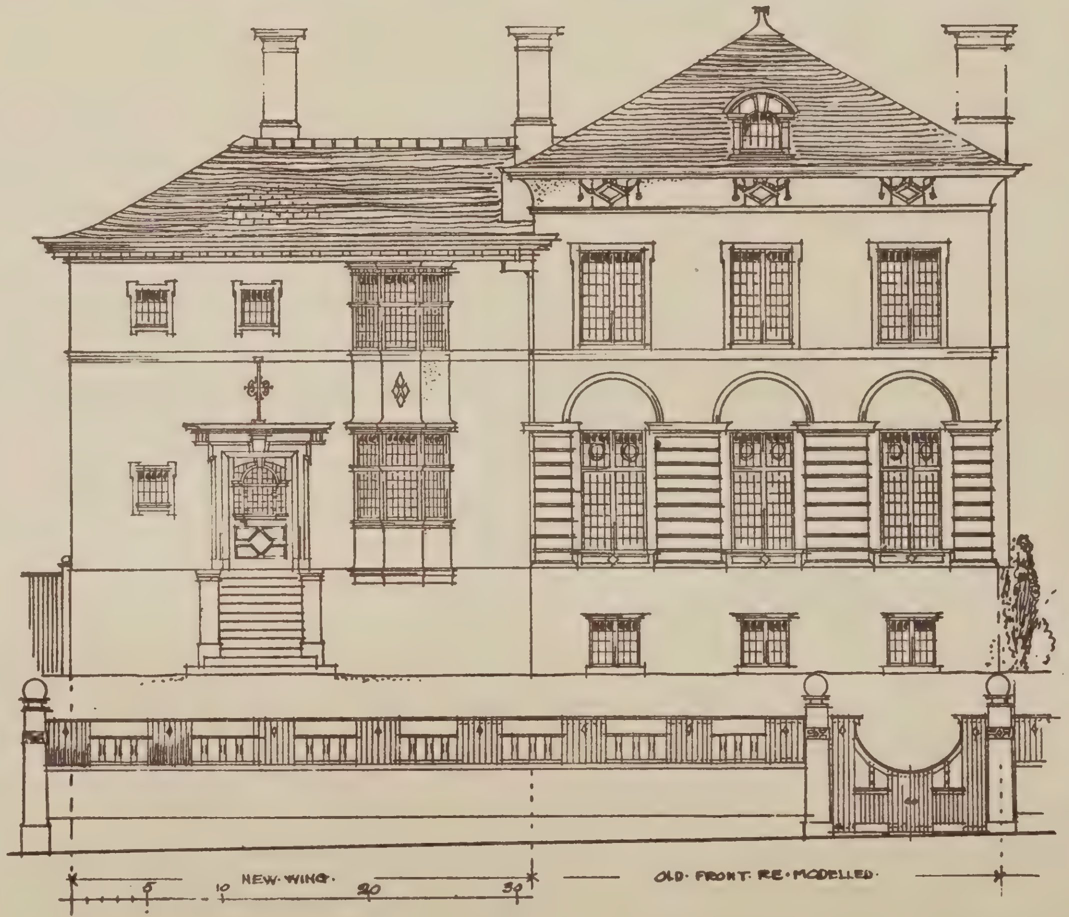

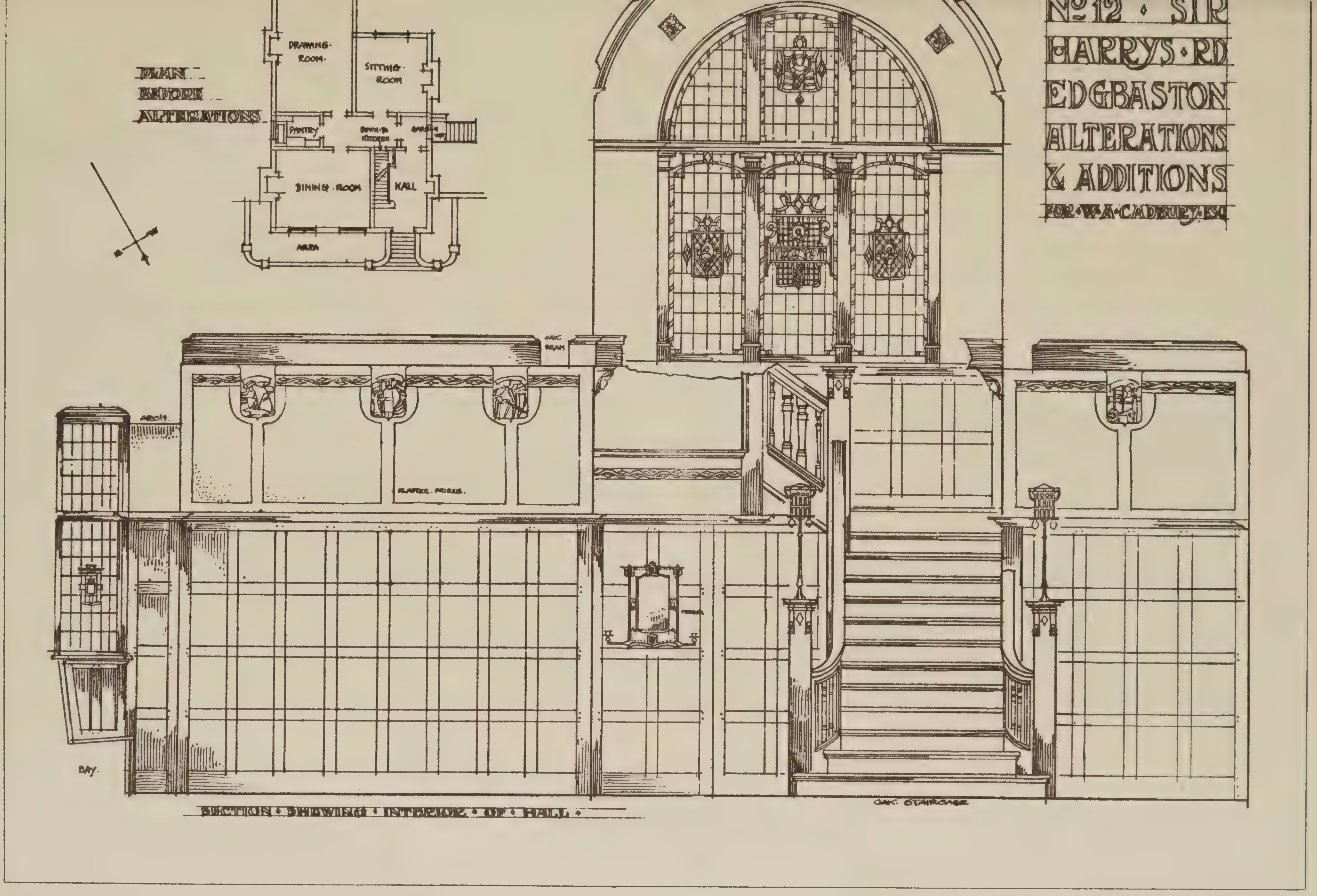

"PHOTO-LITHO." R. J EVERETT & SONS, 56 LUDGATE HILL, E.C.

JAMES A. SWAN, ARCHITECT.

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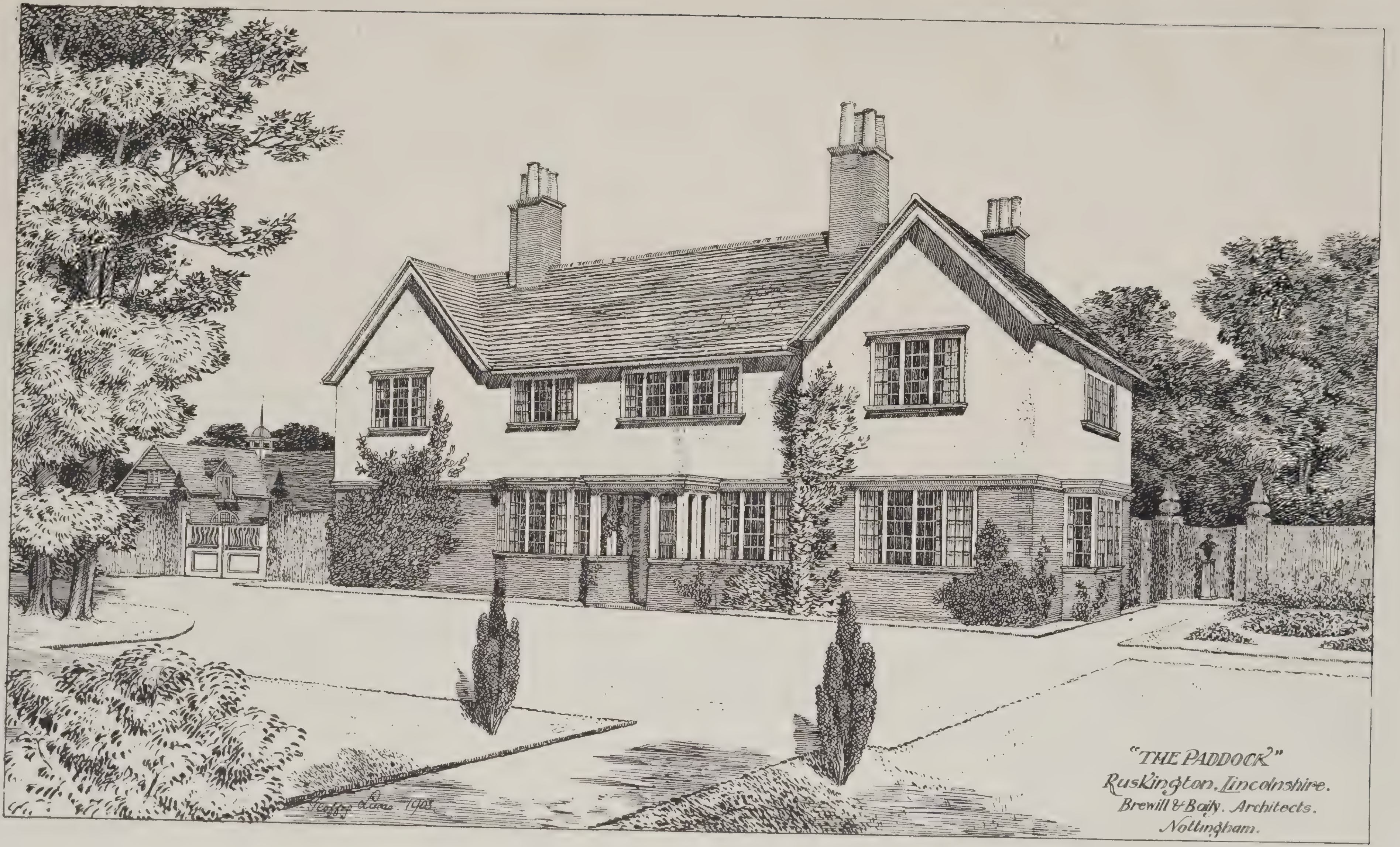

"THE PADDOCK"
Ruskington, Lincolnshire.
Brewill & Baily. Architects.
Nottingham.

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Current Market Prices.

FORAGE.

		£	s.	d.	£	s.	d.
Beans	per qr	1	9	6	1	11	9
Clover, best	per load	4	7	6	4	15	0
Hay, best .. .	do	3	15	0	4	10	0
Sanfoin mixture ..	do	3	15	0	4	5	0
Straw	do	1	10	0	2	2	0

OILS AND PAINTS.

		£	s.	d.	£	s.	d.
Castor Oil, French ..	pet cwt.	1	1	10	1	2	2
Colza Oil, English ..	do.	1	4	0		—	
Copperas . ..	per ton	2	2	6		—	
Lard Oil	per cwt.	2	15	0	2	17	0
Lead, white, ground, carbonate	do.	1	4	10		—	
Do. red	do	1	0	½			
Linseed Oil, barrels ..	do	1	1	0		-	
Petroleum American ..	per gal	0	0	5¾	0	0	6
Do Russian ..	do.	0	0	4½	0	0	4⅝
Pitch	per barrel	0	8	0		—	
Shellac, orange	per cwt.	7	0	0	7	1	0
Soda, crystals	per ton	3	2	6	3	5	0
Tallow Town	per cwt	1	8	3		—	
Tar, Stockholm	per barrel	1	0	6		—	
Turpentine	per cwt.	1	18	3		—	

METALS.

		£	s.	d.	£	s.	d.
Copper, sheet, strong ..	per ton	71	0	0		—	
Iron Staffs., bar . .	do	6	10	0	8	10	0
Do. Galvanised Corrugated sheet ..	do.	11	5	0		—	
Lead, pig. Soft Foreign ..	do.	11	8	9	11	12	6
Do. do. English common brands	do.	11	17	6		—	
Do. sheet English 3lb. per sq. ft and upwards ..	do.	14	0	0		—	
Do. pipe	do.	15	0	0		—	
Nails, cut clasp, 3in to 6in.	do.	9	5	0		—	
Do. floor brads ..	do.	9	0	0		—	
Steel, Staffs., Girders and Angles	do.	5	10	0	6	7	6
Do. do. Mild bars ..	do.	6	7	6	7	2	6
Tin, Foreign	do.	122	10	0	123	0	0
Do. English ingots ..	do.	123	10	0	124	0	0
Zinc, sheets, Silesian .	do.	26	0	0		-	
Do. do. Vielle Montaigne	do.	26	5	0		—	
Do Spelter	do.	20	7	6	21	15	0

TIMBER.

Soft Woods.

		£	s.	d.	£	s.	d.
Fir, Dantzic and Memel	per load	1	13	0	3	0	0
Pine, Quebec, Yellow ..	do.	5	5	0	6	5	0
Do. Pitch	do.	2	12	0	3	3	0
Laths log, Dantzic ..	per fath.	4	10	0	5	10	0
Do. Petersburg ..	do.	7	5	0		—	
Deals, Kovda, 3rd Yell. 3×9	per load	13	15	0		—	
Do. Petersburg, 1st White 3×11	do.	13	5	0		—	
Do. Galatz, White, 1st, 3×8	do.	8	15	0		—	
Do. do. do. 3×7	do.	8	5	0		—	
Do. do. do. 3×11	do.	10	10	0		—	
Do. do. do. 3×9	do.	10	0	0		—	
Do. Björneborg Yell., 4th, 2½×7	do.	9	15	0		—	
Do. Hunsum, Yellow 3×9	do.	5	0	0		—	
Do. Nederkalix, Yellow, 1st, 3×7	do.	10	0	0		—	
Do. do. do. 2nd 2½×7	do.	10	0	0		—	
Do. do. do. 3×8	do.	9	15	0		—	
Do. do. do. 3×7	do.	9	10	0		—	
Do. Carlsvik, Unsorted Yellow, 3×7	do.	7	0	0		—	
Do. do. do. 3×9	do.	6	15	0		—	
Do. Skelleftea, Mixed Yellow, 2½×7	do.	12	0	0		—	
Do. Gulf Port, extra prime Pitch Pine, 3×9	do.	14	10	0		—	
Do. do. prime Pitch Pine, 3×9	do.	11	0	0		—	
Do. Domsjö, Yellow, 2nd, 2½×7	do.	11	15	0		—	
Do. Ljusone, Yellow, 3rd 3×8	do.	12	0	0		—	
Do. Galatz, White, 4th 3×14	do.	5	0	0		—	
Do. do. do. 3×13	do.	5	15	0		—	
Do. do. do. 3×12	do.	6	0	0		—	
Do. Skelleftea, Unsorted White, 4×9	do.	12	15	0		—	
Do. do. do. 3×11	do.	11	15	0		—	
Do. St. John, White Spruce, 1st, 2nd. & 3rd, 3×7	do.	8	10	0		—	
Do. Quebec, Bright Yell., 4th Pine, 3× 1	do.	10	0	0		—	
Do. do. White Spruce, 1st 3×9	do.	13	0	0		—	
Do. do. do. 3rd 3×11	do.	10	15	0		—	
Do. Bright Yellow Pine, 4th, 3×11	do.	11	5	0		—	
Do. Montreal, Bright Yell. Pine, 4th, 3×11	do.	10	5	0		—	
Battens, all kinds ..	do.	6	5	0	16	10	0
Flooring Boards 1in. prepared, 1st	per square	0	10	6	0	12	3
Do. 2nd	do.	0	8	9	0	11	3
Do. 3rd &c.	do.	0	9	3	0	10	9

Hard Woods.

		£	s.	d.	£	s.	d.
Ash, Quebec	per load	3	12	6		—	
Birch, Quebec	do.	3	12	6	3	17	6
Box, Turkey	per ton	15	0	0	20	0	0
Cedar, Cuba	per ft. sup.	0	0	5¼		—	
Do. Honduras ..	do.	0	0	5$\frac{31}{32}$		—	
Do. Tobasco	do.	0	0	4$\frac{21}{32}$		—	
Elm, Quebec	per load	4	0	0		—	
Mahogany, Average Price for Cargo, Honduras ..	per ft. sup.	0	0	6$\frac{1}{32}$		—	

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

During the week ending July 18th fifteen failures in the building and timber trades in England and Wales were gazetted.

J. Clarke, builder, Manor Park. Adj. July 6th.

J. E. Dyne, builder, Willesden Green. Adj. July 11th.

R. Hedley, joiner, Stamfordham. Adj. July 1st.

I. Gibson, builder, Hull. R.O. and adj. July 10th.

C. Shepherdson, builder, Hull. R.O. and adj. July 6th.

J. Davies, builder, Llanelly. R O. and adj. July 1 th.

W. G. Brown, contractor, Leicester. Adj. July 11th.

J. Cooper, plasterer and builders' merchant, Stockton-on-Tees. R.O. July 7th.

A. T. Haines & Co., builders, West Ham. R.O. July 10th.

J. Molyneux, builder, St. Helens. Adj. July 4th. Gross liabilities £1,169; assets £659.

A. Tillotson, decorator and upholsterer, Wandsworth. Adj. July 9th.

E. Cave, timber merchant Sheffield. First meeting, O.R.'s, Sheffield, July 20th, at 3.

J. Gibson, builder, Newburn. Liabilities £689; assets £2. Started with £50 borrowed from his father.

G. S West, builder, Herne Bay. Liabilities expected to rank for dividend £2,744; assets estimated at £534.

J. H. May & J. Williams, builders, Abertillery. Liabilities £174; assets £10.

W. Franks, builder, Wednesbury. Gross liabilities £179; assets £5; deficiency £174.

J. Matthews, builder and contractor, Aberkenfig. Gross liabilities £2,339. of which £2,055 is expected to rank for dividend; deficiency £682.

C. F. Gee, builder, Dover. Gross liabilities £392, of which £374 are to rank for dividend; assets estimated at £132.

W. Gibson, builder and contractor, Exeter. Adj. July 8th. Gross liabilites £3,308, of which £2,261 is expected to rank for dividend; assets £2,154; deficiency £107.

D. Morgan, builder and contractor, Swansea. First meeting, O.R.'s, Swansea. July 24th, at 12. P.E., Swansea Town Hall, July 31st, at 11 30.

R. Francis, builder, Gilfach Goch. First meeting, 117, St. Mary Street, Cardiff, July 20th, at 12. P.E., Cardiff Town Hall, August 4th, at 1 .

W. Moses, builder and contractor, Sennybridge. First meeting, 135, High Street, Merthyr Tydfil, July oth, at 2. P.E., Merthyr Tydfil Town Hall, August 12th, at 3.

F. H. Hopkins, builder and contractor, Brixton. R.O. July 8th. First meeting, Bankruptcy Court. July 23rd, at 12. P.E., Bankruptcy Court, August 18th, at 12.

A. E. Keys, builder, Streatham. First meeting, 24, Railway Approach, London Bridge, S.E., July 20th, at 11.30. P.E., Wandsworth C.C., August 6th, at 12.

E. Hughes, builder, Stroud Green. R.O. July 8th. First meeting, Bankruptcy Court, July 27th, at 11. P.E., Bankruptcy Court, August 18th, at 12.

J. King, contractor, Kilburn. Adj. July 10th. First meeting, Bankruptcy Court, July 22nd, at 2.30. P.E., Bankruptcy Court, August 25th, at 11.

W. Dawbarn & Co, builders' merchants, Liverpool. First meeting, O R.'s, Liverpool, July 20th, at 12. P.E., Liverpool C.C., July 23rd, at 11.30.

C. F. Rowthorn, stonemason, Portsmouth. R.O. and adj. July 10th. First meeting, O.R.'s, Portsmouth, July 22nd, at 3. P.E., Portsmouth C.C., July 27th, at 11.30.

W. B. Joslin, builder, Hull. Gross liabilities £7.986; £7,730 fully secured; £256 to rank for dividend; assets £200; deficiency £34.

G. & J. Ambrose, builders, contractors, &c, Colchester. Adj. July 3rd. First meeting, Cups Hotel, Colchester, July 24th, at 11. P.E., Colchester Law Courts, July 30th, at 11.30.

R. Boulton, joiner and undertaker, Dalton-in-Furness. First meeting, O.R.'s, Barrow-in-Furness, July 29th, at 12. P.E., Barrow-in-Furness Magistrates' Court, July 29th, at 3.

Payne & Hastings, timber merchants, London, E.C. R.O. July 1st. First meeting, Bankruptcy Court, July 23rd, at 12. P.E., Bankruptcy Court, August 25th, at 11.30.

H. Fuller, plumber, painter and glazier, Norwich. R.O. and adj. July 8th. First meeting, O.R.'s, Norwich, July 22nd, at 3. P.E., Norwich Shirehall, July 22nd, at 11.

D. Ellis, builder and contractor, Llandudno. Adj. July 8th. First meeting, Crypt Chambers, Eastgate Row, Chester, July 20th, at 11.15. P.E., Bangor Magistrates' Room, August 15th, at 12.15.

E. K. Purnell, architect and surveyor, Coventry. R.O. and adj. July 7th. First meeting, O.R.'s, Coventry, July 22nd, at 12. P.E., Coventry County Hall, August 5th, at 2 30.

Durrant & Green, plumbers, painters and house decorators, Malvern. R.O. and adj. July 4th. First meeting 45, Copenhagen Street, Worcester, July 18th, at 11.30. P.E., Worcester Guildhall, July 28th, at 2.15.

E. Lamb, brickmaker, Chester. R.O. July 6th. Adj. July 7th. First meeting, Crypt Chambers, Eastgate Row, Chester. July 20th, at 2.30. P.E., The Castle, Chester, August 6th, at 11.

B. J. Parkes, builder, contractor, carpenter and joiner, Wednesbury. R.O. June 30th. First meeting, O.R.'s, Wolverhampton, July 20th, at 12. P.E., Walsall C.C., July 21st, at 11.30. Gross liabilities £473; assets £150; deficiency £323.

The following companies have decided to wind up:—

Aberthaw Blue Lias Lime Co, Ltd, Lower Penarth. F. A Jenkins, Exchange Buildings, Bristol, liquidator.

Granite Corporation, Ltd.

Midland Building and Supply Co., Ltd., Tipton. T. G Mellows, King John's Chambers, Nottingham, and another, appointed liquidators

Noiseless Flush Cistern Co, Ltd, Halifax First meeting, O.R.'s, Halifax, July 15th, at 3.

Trade and Craft.

A Gas Boiler.

An interesting and useful novelty has recently been placed on the market by Messrs. Wilsons & Mathiesons, Ltd., of Carlton Works, Armley, Leeds, in the shape of a boiler, which has been specially designed and constructed to supply the demand for a cheap, durable and economical gas set pan. The Wilson "Scarbro" gas boiler is being extensively introduced into new houses in place of the old coal fixtures. The gas boiler has a combined steam outlet and flue as shown in the accompanying illustration, and is made of strong planished copper, tinned with pure metal. The top, hinged lid, and flues are of fine galvanized cast iron. The legs are of strong cast-iron japanned, and the case is of galvanized plate-iron. As the boiler stands on legs, the floor underneath can be properly cleaned. Messrs. Wilsons & Mathiesons have showrooms at 58, Boar Lane (corner of Albion Street), Leeds, and also at 76, Queen Street, Cheapside, London, E.C.

Non-Flammable Wood.

The Non-Flammable Wood and Fabrics Co., Ltd., of Townmead, Road, Fulham, S.W., issue a pamphlet giving concise particulars of non-flammable wood and fabrics as supplied by them. The wood is submitted to a series of operations consisting, first, of a vacuum treatment by which the pores are opened and partially cleansed; second, saturating with a fireproofing solution throughout the various pores and tissues; and, third, evaporation of the water of the solution: the whole resulting in rendering the wood incapable of spreading flame, causing it instead, when subjected to fire, to merely carbonize slowly at the point of contact. The woods that lend themselves best to successful treatment are:—Ash, beech, birch, chestnut, deals, elm, firs, mahogany, pines, walnut and whitewood. Oak and teak are more difficult to treat, and require a special process. Non-flammable wood takes paint, polish and varnish equally as well as similar wood untreated: in fact, it especially lends itself to a beautifully even polish. The time for treatment varies according to the description and thickness of the wood; including drying, it occupies from twenty to forty days, but the company keep large quantities of stock timber on supply. The cost of non-flammable wood varies according to its thickness and character. A deal door costing 30s. would cost 35s. if made of non-flammable deal: a pine mantelpiece of ordinary wood costing £2 10s. would cost £3 5s. if made of non-flammable wood: on the unwrought wood the proportion of increased cost is higher. Non-flammable wood has been used at the British Museum, Windsor Castle, Wyndham's Theatre, Earl's Court Exhibition, Harrod's Stores and many other important buildings throughout the kingdom. It is undoubtedly an excellent safeguard against fire.

The Editors of THE BUILDERS' JOURNAL, in response to many repeated requests by students and others, have compiled the following list of the most suitable books published on the various subjects which appertain to architecture and the building trades. Special arrangements have been made to enable readers to be supplied with books at the published prices, *post free.* An endeavour will be made to obtain for regular readers and subscribers any other Technical Books not in this or succeeding lists, and these will also be forwarded to them post free. The names given in brackets are those of the authors or editors of the respective books.

The Builders' Journal List of Technical Books.

Remittances for the amounts stated below should be sent by postal orders, addressed to THE PUBLISHER, TECHNICAL JOURNALS, LTD., 6, Great New Street, London, E.C.

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„	23	Aldeburgh, Suffolk – Well	Corporation	J. C. Gordon, Borough Surveyor, Aldeburgh.
„	23	Swindon—Seven Electric Tramcars	Corporation	Lacey & Sillar, 78 King Street, Manchester.
„	23	Rhondda—Laying Water-mains	Urban District Council	O. Thomas, Gas and Water Offices, Pentre, R.S.O., Glam.
„	24	Thorne—Lighting	Parish Council	C. Waller, Clerk, Council Offices, Thorne.
„	25	Liverpool – Protective Mantle on River Bank	——	R. P. Allenby, 16 Cook Street, Liverpool.
„	25	London, S,W.– Heating Apparatus	Metropolitan Asylums Board	T. D. Mann, Clerk, Board's Offices, Embankment. E C.
„	25	Sligo - Lining Well	Rural District Council	M. F. Conlon, Council's Clerk, Court House, Sligo.
„	27	Blackburn—Switchboard, &c.	Town Council	Lacey & Sillar, 2 Queen Anne's Gate Westminster, S.W.
„	27	Aberystwyth - Breakwater	Corporation	A. T. Walmisley. 9 Victoria Street, Westminster. S.W.
„	27	Longton—Detritus Tanks, &c.	Town Council	J. W. Wardle, Borough Engineer, Court House, Longton.
„	27	Wallsend—Steel Hopper	Corporation	G. Hollings, Borough Surveyor, Wallsend.
„	28	Feniton, Devon – Weir	County Council	H. Michelmore, Clerk. Council Offices. Castle of Exeter.
„	29	Pietermaritzburg—Six Electric Tramcars	Corporation	Mordey & Dawbarn. 82 Victoria Street, S.W.
„	29	Burnley—Cistern	Guardians	G. Edmondson, 18 Nicholas Street, Burnley.
„	30	Manchester - Machinery, &c.	Baths & Washhouses Committee	City Architect, Town Hall, Manchester.
„	31	Hapton—Electrical Lighting	Parish Council	E. O'Shaughnessy, 16 Hamilton Terrace, Padiham.
Aug.	1	Withington—Reservoir, &c.	Urban District Council	A H. Mountain, Council's Surveyor, Town Hall, West Didsbury.
„	3	Glasgow—Washing Machines	Corporation	W. Thompson, 187 George Street, Glasgow.
„	3	Glasgow—Water-piping	Corporation	D. M Coll, 65 Cochrane Street, Glasgow.
„	3	Belfast—Ferry Boat	Harbour Commissioners	W. A. Currie, Secretary, Harbour Office, Belfast.
„	4	Christiania—Wheels and Axles	Norwegian State Railways	Director of Engineering Department, Christiania.
„	4	Manchester—Distribution and Discharge Apparatus	Rivers Committee	Secretary. Rivers Department, Town Hall, Manchester.
„	5	Tenbury—Laying, &c., Pipes	Rural District Council	Wilcox & Raikes 63 Temple Row, Birmingham.
„	6	Portland Bill, Dorset - Lighthouse, &c.	——	Principal Keeper, Low Lighthouse, Portland. Dorset
„	8	Gijon, Spain—Port Works	——	Ministry of Agriculture &c., and Public Works, Madrid
„	10	Kettering, Embankment &c.	Urban District Council	T. R. Smith. Council's Engineer, Market Place, Kettering.
„	10	Glasgow—Two Ferryboats	Clyde Navigation Trustees	G. H. Baxter, Engineer, Clyde Trust Works, Dalmuir.
„	11	London, S.W.—Switchboards	London County Council	Clerk, County Hall, Spring Gardens, S.W.
„	19	Port Adelaide—Railway Materials	——	Chief Mechanical Engineer, Islington, South Australia.
„	31	Belfast—Graving Dock	Harbour Commissioners	G. F. L. Giles, Engineer, Harbour Office Belfast.
Sept.	2	Corrientes—Waterworks	——	Engineer-in-Chief, Rividavia 1,255, Buenos Aires.
„	12	Sydney—Electric Tramway Generating Set	Railway Commissioners	Agent-General for New South Wales, 9 Victoria Street, S.W.
	28	Launceston Tasmania—Electric Meters	——	J. Terry & Co., 7 Great Winchester Street, E.C.
Oct.	30	Marina, Upper Barracca, Malta—Lift	Crown Agents for the Colonies	Receiver-General and Director of Contracts, Valletta, Malta.
		FURNITURE:		
July	23	Burnley—Furnishing Schools	——	A. J. Shaw & T. H. Vowles, Architects, Mercantile Chmbrs., Burnley.
		IRON AND STEEL:		
July	23	Rhondda—Pipes, &c	Urban District Council	O. Thomas, Gas and Water Offices, Pentre, R S.O., Glam.
„	23	Manchester—Pipes	Gas Committee	C. Nickson, Superintendent, Gas Dept, Town Hall, Manchester.
	24	Queenstown—Pipes	Urban District Council	J. H. Campbell. Town Clerk, Town Hall, Queenstown.
„	24	Whitehaven—Castings, Iron, Tools, &c.	Harbour Commissioners	J. Tyson, Clerk, Harbour Office, Queen's Dock Quay, Whitehaven.
„	27	Cheadle, Cheshire—Rails, &c.	Urban District Council	C. R. Brady, 13 Warren Street, Stockport.
„	27	Walton-on-Thames—Pipes	Urban District Council	W. H. Radford, Albion Chambers, King Street, Nottingham.
„	28	Glanville, South Australia—Steel Bars	S. Australian Government	Chief Storekeeper, Public Stores. Port Adelaide.
Aug	1	Glasgow - Pipes	Corporation	J. R. Sutherland, 45 John Street, Glasgow.
„	4	London, N.E.—Iron Railings	London County Council	General Construction Section, Architect's Department, 18 Pall Mall East, S.W.

Complete List of Contracts Open —*continued.*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	PAINTING AND PLUMBING:		
July 23	Chatham—Painting Town Hall, &c.	Corporation	C. Day, Borough Surveyor, Town Hall, Chatham.
„ 24	Whitehaven—Lead, Oils, Paints, &c.	Harbour Commissioners	J. Tyson, Clerk, Harbour Office, Queen's Dock Quay, Whitehaven.
„ 24	Northwich—Colourwashing, &c., Schools	——	A. E. Thomas, 174 London Road, Northwich.
„ 27	Whittingham, near Preston, Lancs—Painting Asylum	——	Master of Asylum, Whittingham, Preston, Lancs.
„ 27	Newcastle-on-Tyne—Painting, &c., Hall	Parks Committee	Building Inspection Office, Town Hall, Newcastle-on-Tyne.
„ 27	Hendon, N.W.—Painting, &c., Asylum	——	W. Lockwood, 36 Gerrard Street Soho, W.
„ 27	Walhamstow—Painting, &c., to Schools	——	H. Prosser, Architect, Committee's Offices, High St., Walthamstow.
Aug. 6	London, E.—Painting, &c., Workhouse	Stepney Union Guardians	Master, Workhouse, St. Leonard's Street, Bromley-by-Bow, E.
	ROADS AND CARTAGE:		
July 23	London, N.E.—Making-up Road	Hackney Borough Council	N. Scorgie, Borough Engineer, Town Hall, London, N.E.
„ 23	Nantyglo—Limestone	Urban District Council	J. A. Shepard, Clerk, Town Hall, Tredegar.
„ 23	Stockport—Paving, &c.	Highways & Sewers Committee	J. Atkinson, Borough Surveyor, St. Petersgate, Stockport.
„ 23	Tamworth—Paving, &c.	Corporation	F. E. G. Bradshaw, 36 Aldergate, Tamworth.
„ 23	Tunbridge Wells—Paving, &c.	Town Council	W. H. Maxwell, Borough Engineer, Town Hall, Tunbridge Wells.
„ 24	Meltham—Road	Urban District Council	J. B Abbey & Son, 34A New Street, Huddersfield.
„ 25	Dartford—Making-up Private Streets	Rural District Council	W. Harston, 8 Hythe Street, Dartford.
„ 27	Aberdeen—Causewaying Albert Quay	Harbour Commissioners	R. G. Nicol, Engineer, Harbour Office, Aberdeen.
„ 27	Lanchester—Asphalting	Parish Council	H. Knowles, Council's Clerk, Burnhope.
„ 27	Frinton-on-Sea—Making-up Road	Urban District Council	P. O. Macdonald, 1 Old Road, Frinton-on-Sea.
„ 27	London, N.—Road Works	Hornsey U.D.C.	E J. Lovegrove, 99 Southwood Lane, Highgate, N.
„ 28	Chelmsford—Two Steam Road-rollers, Scarifiers, &c.	Essex County Council	P. J. Sheldon, Chief Surveyor, Council Offices Chelmsford.
„ 28	Chelmsford—Steam Road Rollers	Essex County Council	P. J. Sheldon, Chief Surveyor, County Offices, Chelmsford.
„ 28	Horsham—Quartzite, &c.	Urban District Council	S. Mitchell, Clerk, Council Offices, Horsham.
„ 28	Winchester—Roads, &c.	Town Council	City Surveyor, Guildhall, Winchester.
„ 29	Barnet—Granite, Gravel, &c.	Urban District Council	Clerk, Council Offices, 40 High Street, Barnet.
„ 29	London, N.E.—Granite	Wanstead U.D.C.	W. Blewitt, Clerk, Council Offices, Wanstead, N.E.
„ 29	London, N.E.—Steam Rolling, &c.	Wanstead U.D.C.	W. Blewitt, Clerk, Council Offices, Wanstead, N.E.
„ 29	Fulham—Making-up Road	Borough Council	F. Wood, Borough Surveyor, Town Hall, Fulham, S W.
Aug. 1	East Dereham—Granite	Urban District Council	H. G. Himson, Theatre Street, East Dereham.
„ 6	Thames Ditton—Construction of Roads, &c.	——	C. & F. Rutley, 11 Dowgate Hill, E.C.
	SANITARY:		
July 23	Trowbridge—Sewers	Urban District Council	H. G. Nicholson-Lailey, Town Hall, Trowbridge.
„ 23	Trowbridge—Sewage-Disposal Works	Urban District Council	W. H. Stanley, Market House Chambers, Trowbridge.
„ 24	Pershore—Drain, &c.	Highways & Bridges Committee	J. H. Garrett, County Road Surveyor, Shirehall, Worcester.
„ 25	Bacup—Sewer	Corporation	W. H. Elch, Borough and Water Engineer, Bacup.
„ 25	Woodhall Spa, Lincs—Sewers, &c.	Urban District Council	E. Bolton, Surveyor, Woodhall Spa, Lincs.
„ 27	Walton-on-Thames—Sewerage Works	Urban District Council	W. H. Radford, Albion Chambers, King Street, Nottingham.
„ 28	Tonbridge—Removal of Refuse	Urban District Council	W L. Bradley, Surveyor Tonbridge Castle.
„ 29	Thrapston—Sewer	Parish Council	T. Lloyd Sanitary Surveyor, Council's Offices, Halford Street, Thrapston.
„ 29	London. E.—Disinfector	Wanstead U.D.C.	Chairman, Council Offices, Wanstead, N.E.
„ 29	Sevenoaks—Sewage Works	Rural District Council	B Latham, Parliament Mansions, Victoria Street, Westminster.
Aug. 4	Hale, Cheshire—Sewers, &c.	Urban District Council	F J. Lobley, Engineer, Hale, Cheshire
„ 4	Talgarth, Herefordshire—Sewerage and Sewage-Disposal Works.	Rural District Council	R. E. W. Bemington, Engineer, Bank Buildings, Wolverhampton.
„ 10	London, N.—Construction of Sewers	Hornsey U.D.C.	E. J. Lovegrove, 99 Southwold Lane, Highgate, N.
	TIMBER:		
July 24	Whitehaven—Timber	Harbour Commissioners	J. Tyson, Clerk, Harbour Office, Queen's Dock Quay, Whitehaven.
„ 29	Cape Town—Sleepers	Railway Department	Railway Stores, Cape Town, Port Elizabeth.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &C.	BY WHOM ADVERTISED.
Sept. 12	Stonehaven, Scotland—Alterations and Additions to Town Hall.	——	——	G. Murdoch, Borough Surveyor, Stonehaven.
1904. Mar. 31	Vienna—Machinery to Lift Boats on Canal	100,000, 75,000 and 50,000 kronen.	——	Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C.
No date	Acton—School	1st, 5 per cent. commission; 2nd, £30; 3rd, £20.	——	B. S. Gott, Clerk, Guildhall, Westminster, S.W.

New Companies.

British Patent Tube Cleaning Syndicate, Ltd., cleaners of water and other mains, gas pipes, economiser boiler pipes, marine tubes, &c., 41, Sunbridge Road, Bradford. Capital: £10,000 in £1 shares.

Caston & Co., Ltd., art metal workers, &c., makers of gas and electric light fittings, &c., 29, Great Dover Street, Borough, S.E. Capital: £5,000 in £1 shares (2,500 preference).

Caucasus Timber Co., Ltd., dealers in timber and wood of all kinds, sawmill proprietors, &c. Capital: £10,000 in £1 shares.

Melincourt Collieries, Ltd., colliery owners, brickmakers, quarry owners, &c., 2, Church Place, Neath, Glamorgan. Capital: £160,000 in £10 shares.

Wiregill Deep, Ltd., miners, quarry owners, brickmakers, &c., County Chambers, Westgate Road, Newcastle-on-Tyne. Capital: £10,000 in £1 shares (6 400 preference).

South Wales United Collieries (Groeswen and Caradog Extension), Ltd, colliery owners, dealers in iron, clay, stone, bricks, pipes, &c., 70, Queen Victoria Street, E.C. Capital: £125,000 in £1 shares.

Empress Gold Paint and Speciality Co., Ltd., manufacturers of gold bronze and coloured paints, &c., 145, Brecknock Road, London. Capital: £1,000 in £1 shares.

J. A. Ewins & Co., Ltd., builders and dealers in gas and oil engines, general engineers, &c., 70, Scholefield Street, Birmingham. Capital: £5,000 in £1 shares.

Judkins, Ltd., quarry owners and stone merchants, brick and tile manufacturers, &c., Tuttle Hill, Nuneaton. Capital: £15,000 in £100 shares (12 "A" and 138 "B").

Stechford Estate Co., Ltd, builders, contractors, decorators dealers in stone, sand, lime, bricks, timber, &c., 3, Temple Row West, Birmingham. Capital: £20,000 in 386 preference shares of £50 each, and 140 ordinary shares of £5 each.

Thornley & Knight, Ltd., manufacturers and factors of japan, paints, colours, oils, varnish, turpentine, brushes, &c., Bordesley, Green Road, Birmingham. Capital: £20,000 in £1 shares.

New Hall, Birmingham, Ltd., to acquire land, buildings, &c., builders, contractors, decorators, builders' merchants, &c. Capital: £500 in £1 shares.

Squire Ashton & Sons, Ltd., builders, contractors, timber merchants, and dealers in building materials, &c. Capital: £30,000 in £10 shares.

Adamant Brick, Tile and Terra-cotta Co., Ltd. brick, tile, terra-cotta, pine and earthenware manufacturers, Hopton, Lancashire. Capital: £5,000 in £1 shares.

Westminster (Liverpool) Trust Co., Ltd., to acquire land, buildings, &c., to construct, furnish and maintain offices, flats, houses, shops, factories, &c. Capital: £5,000 in £1 shares.

Coming Events.

Wednesday, July 22.

Architectural Association.—Annual Excursion around Worcester and District. (From Monday, July 20th, to Saturday, July 25th.)

British Association of Waterworks Engineers.—Eighth Annual General Meeting at Bolton. (Second Day.)

Thursday, July 23.

British Association of Waterworks Engineers.—Eighth Annual General Meeting at Bolton. (Third Day.)

Friday, July 24.

British Association of Waterworks Engineers.—Eighth Annual General Meeting at Bolton. (Fourth and last Day.)

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A BUILDER, PLUMBER & DECORATOR retiring from large estate needs RE-ENGAGEMENTS. Certificated bailiff. Rents collected, estates managed. Well up in all general repairs. Own plant and tools for all trades. Abstainer.—Apply, E. Payne, 27, Quaker Street, Spitalfields.

ARCHITECT'S ASSISTANT (22), requires SITUATION; 5 years' North and South experience. Quantities, competition and working drawings, details, specifications, levelling, surveying, &c. Salary, 25s. Specimens.—Phillips, Pier Hotel, Minehead.

ARTISTIC & PRACTICAL ASSISTANT wants to change situation. Good all-round experience. Designing, working drawings, good freehand and perspective in any treatment. Small salary; looking for better work.—Box 2495, Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

CARPENTER and JOINER wants job as Caretaker on estate, or do repairs hotel or flats; married; no children; abstainer; good references.—D., 23a, James Street, Oxford Street, W.

GENERAL or WORKING FOREMAN seeks engagement. Good references. Aged 41. Carpenter by trade.—W. N., 19, Rumsey Road, Stockwell, S.E.

GOOD MASON wants Job Abstainer. Good draughtsman. Capable of setting out. References. — Mason, Stone Works, Frinton-on-Sea, Essex.

HOT WATER FITTER'S MATE wants Work; good, strong; age 20; knowledge of smithing.—A.D., 89, Denmark Road, West Kilburn.

JUNIOR ASSISTANT desires engagement. Neat Draughtsman, Tracer and Colorist. Measuring and Plotting. Good references.—F. Ash, Cotham Road South, Bristol.

JUNIOR ASSISTANT disengaged. Varied experience.—Box 2501, Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

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PLUMBER, Gas and Hot Water Fitter, &c. Constancy. 4 years last sit. Abstainer. Good workman.—J. Sturley, 131, Dennett Road, West Croydon, Surrey.

Appointments Vacant.

CONTRACTOR'S FOREMAN WANTED. One used to Estate, Drainage, Sewer, and Ground Work.—Apply by letter, T. S., 45, South Molton Street, W.

GENTLEMANLY and INTELLIGENT LAD Wanted under 3 years' indentures. Premium £75, returnable as salary.—G. A. T. Middleton, 19, Craven Street, W.C.

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Miscellaneous.

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NOTE.—Advertisements for this page must reach the Office not later than 5 o'clock p.m. on Monday.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

Aber (near Caerphilly, Wales).—For the erection of an hotel at Aber, near Caerphilly, for the Glamorgan Public House Trust Co., Ltd. Mr. H. Snell, architect, Stanwell Road, Penarth:—

W. Bowers & Co., Hereford	£6,105
J. Howell, Caerphilly	5,950
J. Jones, Penarth	5,680
J. Allen & Son, Cardiff	5,650
T. F. Howells, Cardiff	5,583
T. Rossiter & Sons, Caerphilly	5,500
E. R. Evans & Brothers, Cardiff	5,450
W. T. Morgan,* Cardiff	5,350

* Accepted.

Armley, Leeds.—Accepted for fixing hot-water apparatus at Hartley & Co.'s warehouse. Mr. Frederick W. Rhodes, M.S.A., architect, Upper Wortley, near Leeds:—

Dixon Powner, Leeds	£78	5

Bournemouth.—For additions and alterations to the Cricketer's Hotel, Bournemouth, for Marston's Dolphin Brewery, Ltd., Poole. Mr. Walter Andrew, architect and surveyor, Parkstone and Poole:—

Jenkins & Sons	£1,913
Millar & Sons	1,839
Jones & Sons	1,829
Williams & Son	1,766
W. Hoare*	1,727

* Accepted. [All of Bournemouth.]

Featherstone (Yorks).—For the supply of 9in. pipes for extension of waterworks, for the Featherstone Urban District Council. Mr. Frederick B. Rothera, engineer and surveyor:—

C. P. Kinnel & Co., London	£1,751	0	0
E. & W. H. Haley, Bradford	1,719	0	10
L. Cooper, Leeds	1,667	8	0
Stanton Ironworks Co., Notts	1,657	8	2
Cochrane & Co., Middlesbrough	1,595	8	9
Clay Cross Co., Clay Cross	1,563	14	5
H. A. Fawell, Bradford	1,563	14	4
A. G. Cloake, London	1,562	18	4
Staveley Coal and Iron Co.,* Staveley	1,530	15	8
Sheepbridge Coal and Iron Co., Chesterfield	1,527	2	6

* Accepted.

Hele (Devon).—For additions to Hele Paper Works, for the Hele Paper Co. Mr. Charles J. Bulgin, architect, City Chambers, Exeter. Quantities by Mr. Vincent Cattermole Brown, Paignton:—

G. Setter, Exeter	£3,700	0
Labdon & Sons, Cullompton	2,363	10
M. Pratt, Clyst St. Mary	2,325	0
Nicks, Brothers,* Bradninch	2,030	6

* Accepted.

Ipswich.—For the enlargement of Ipswich post-office, for H.M. Office of Works, &c.:—

		A.
H. J. Linzell	£2,454	£75
W. H. Death	2,450	57
Spencer, Santo & Co.	2,190	10
G. Grimwood & Sons	1,952	110
R. Girling	1,930	100
A. Sadler	1,898	48
T. Parkington & Son	1,800	78
F. Bennett*	1,780	130

* Accepted. [A. Credit old materials.]

Knowle, Bristol.—For the erection of a new hotel for Messrs. I. & T. Ushers, Ltd., New City Brewery, Bristol. Mr. Thomas Scammell, F.S.I., architect and surveyor, 1, St. Stephen Street, Bristol:—

W. Church	£2,993
Eastabrook & Sons	2,934
A. E. Denby & Co.	2,799
E. Clarke	2,795
E. Love	2,585
J. Perkins & Son	2,550
C. A. Hayes	2,550
F. Chown	2,500
T. R. Lewis	2,500
Wilkins & Gosling*	2,475

* Accepted. [All of Bristol.]

Leyton (Essex).—For the making-up, paving and kerbing certain private streets within their district, for the Leyton Urban District Council. Mr. William Dawson, M.I.C.E., surveyor:—

T. Adams	£6,035	9	11
W. Griffiths & Co., Bishopsgate	6,018	12	8
Parsons & Parsons, Ilford	5,924	19	5
G. J. Anderson, Poplar	5,243	0	4
B. W. Glenny, Romford	5,119	19	0
A. W. Porter, Leyton	5,021	15	3
W. Manders,* Lindley Road, Leyton	4,916	10	0

* Accepted. [Surveyor's estimate, £5,750.]

London.—For the erection of a new school at Knapp Road, for the London School Board. Mr. T. J. Baily, Board's architect:—

McCormick & Sons	£22,907	0	0
J. Greenwood, Ltd.	22,626	0	0
Johnson & Co.	22,547	9	8
F. & F. J. Wood	22,494	0	0
Perry & Co.	22,478	0	0
Macey & Sons, Ltd.	22,377	0	0
J. Longley & Co.	22,289	0	0
J. Grover & Son	22,272	0	0
W. Shurmur & Sons, Ltd.	22,176	0	0
J. & M. Patrick	21,963	0	0
A. Porter	21,852	0	0
E. Lawrance	21,744	0	0
W. Downs	21,697	0	0
J. Smith & Sons Ltd.	£21,652	0	0
G. Munday & Sons	21,479	0	0
W. Gregar & Son	20,990	0	0
Treasure & Son,* London and Shrewsbury	20,420	0	0

* Recommended for acceptance.

London.—For the erection of a school for mentally defective children at Glenister Road, for the London School Board. Mr. T. J. Bailey, Board's architect:—

Turnbull & Son	£3,447
E. Lawrence & Sons	3,342
J. Smith & Sons, Ltd.	3,253
W. Akers & Co.	3,141
G. E. Wallis & Sons	3,139
Johnson & Co.	3,102
Treasure & Son	3,101
E. P. Bulled & Co.	3,091
F. & H. F. Higgs	3,088
J. Greenwood, Ltd.	£3,014
J. Garrett & Son	3,001
J. & C. Bowyer	2,993
T. D. Leng	2,966
Rice & Son	2,897
Martin, Wells & Co., Ltd.,* London and Aldershot	2,831

* Recommended for acceptance.

London, S.W.—For the erection of a sorting office at Stockwell, for H.M. Office of Works, &c.:—

				A.
Jones Brothers	£3,730	10	10	—
W. Norton	3,310	0	0	£15
Perry & Co.	3,216	0	0	10
Balaam Brothers	3,180	0	0	5
W. Smith & Son	3,081	0	0	5
B. E. Nightingale	3,056	0	0	—
Martin, Wells & Co, Ltd.	3,000	0	0	—
Edwards & Medway	2,921	0	0	21
J. Chessum & Sons	2,916	0	0	10
W. J. Renshaw	2,897	0	0	5
W. H. Lorden & Son	2,888	0	0	—
Speechley & Smith	2,882	0	0	5
J. Appleby & Sons	2,844	0	0	—
W. Pattinson & Sons	2,844	0	0	—
H. Bragg & Sons	2,819	0	0	2
J. Shelbourne & Co.*	2,779	0	0	5

* Accepted. [A. Credit for old materials.]

London, W.—For the erection of a sorting office at Hanwell, for H.M. Office of Works, &c.:—

Abbott & Herbert	£2,328
Stephens, Bastow & Co., Ltd.	1,998
T. Bendon	1,842
T. H. Kingerlee & Sons	1,830
W. J. Dickens	1,787
E. A. Hadley & Son	1,775
E. Plaistowe	1,738
General Builders, Ltd.	£1,697
B. E. Nightingale	1,658
Collins & Lee	1,646
A. & B. Hanson	1,643
Speechley & Smith	1,620
J. Dorey & Co., Ltd.*	1,550

* Accepted.

Merthyr Tydfil.—For the erection of a lattice girder bridge at Cefn Cemetery, for the Urban District Council. Mr. T. F. Harvey, A.M.I.C.E., engineer and surveyor:—

Patent Shaft & Axle Tree Co., Wednesbury	£3,080
J. Tildesley, Ltd., Willenhall	3,020
E. Finch & Co., Ltd.,* Bridge Works, Chepstow	2,100
Handyside, Ltd., Derby	2,060

* Accepted.

(*Continued on p.* xviii.]

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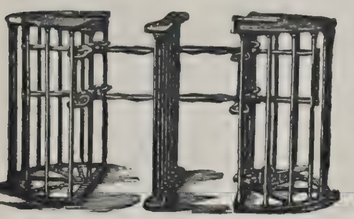

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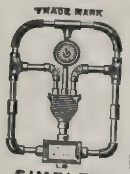

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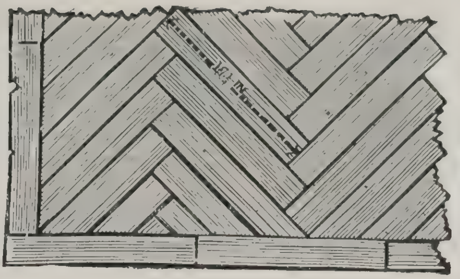

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17¼ × 3 × 2	8 3	7 9	11 5
17¼ × 3 × 1½	6 9	6 3	9 0

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TENDERS—*cont.*

Chelsfield (Kent).—For the erection of a private house. Mr. G. St. Pierre Harris, architect and surveyor, 8, Ironmonger Lane, E.C., and Orpington:—

W. Owen	£917
J. Smith	893
H. Somerford & Son	799
T. Knight	789
Stebbings & Pannett	690

Chelsfield (Kent).—For the erection of a detached cottage at Green Street Green. Mr. G. St. Pierre Harris, architect and surveyor, 8, Ironmonger Lane, E.C., and Orpington:

B. J. White	£475
W. Borer	369
J. Smith	365
W. Owen*	360

* Accepted.

Doune (Kent.)—For addition of a new choir vestry to parish church. Mr. G. St. Pierre Harris architect and surveyor, 8, Ironmonger Lane, E.C., and Orpington:—

W. Borer	£245
J. Smith	240
W. Owen	238

Kemsing, Kent.—Accepted for alterations to "The Wheat-Sheaf" public-house. Mr. G. St. Pierre Harris, 8, Ironmonger Lane, E.C., and Orpington:—

George Saxby	£195	18	6

Lossiemouth (Scotland).—For the construction of drainage works for the burgh, consisting of about 8 miles of fireclay pipe sewers of 6in. to 18in. diameter, with relative works, for the Town Council of Lossiemouth and Branderburgh. Messrs. George Gordon & Co., engineers, and John Wittet, Elgin, Inverness:—

J. Swanson, Caithness	£8,282	16	6
B. & J. Scott, Ayrshire	7,752	18	9
J. Warrack, Aberdeen	7,153	15	0
D. Matheson & Co., Inverness	6,957	1	8
G. Chalmers, Aberdeen	6,840	18	10
MacLeish, Morrison & Co., Perth	6,653	1	3
J. Mackenzie, Nairn	6,479	17	0
J. Martin, Dunfermline	6,128	5	4
R. Fraser, Inverness	5,503	17	8
G. Mackay & Son, Edinburgh	5,500	15	10
T. Munro, Wick		—	
R. Mackay, Aberdeen	5,288	19	11
J. H. Clark, Elgin	5,099	10	7
J. Ross, Invergordon	4,985	19	8
W. Duncan, Inverurie	4,943	19	7
R. C. Brebner, Edinburgh	4,565	12	7
T. Macdonald* Hawthorn Bank, Muirfield Road, Inverness	4,326	3	0

* Accepted.

Merthyr Tydfil.—For the erection of showrooms and stock-rooms, Market Square, Merthyr Tydfil, for Messrs. R. T. Jones & Co., drapers, &c. Mr. C. M. Davies, architect, 112, High Street, Merthyr:—

J. Williams	£2,690	0
J. Jenkins	2,338	7
S. Hawkins	2,320	0
M. Warlow,* Warlow Street	2,199	19

* Accepted. [All of Merthyr Tydfil.]

Merthyr (Wales).—For rebuilding 105 and 106, High Street, Merthyr, for Messrs. R. T. Jones & Co. Mr. C. M. Davies, architect, 112 High Street, Merthyr:—

J. Williams, Merthyr Tydfil	£2,997	8
J. Jenkins, Merthyr Tydfil	2,952	0
Lloyd & Tape, Barry	2,880	0
L. Davies, Abercynon	2,850	0
E. Jones,* Aeron Terrace, Dowlais	2,650	0

* Accepted.

Orpington, Kent.—Accepted for the erection of five cottages in Chapel Avenue. Mr. G. St. Pierre Harris, architect and surveyor, 8, Ironmonger Lane, E.C., and Orpington:—

Stebbings & Pannett	£1,140

Orpington, Kent.—For alterations to "The Maxwell Arms." Mr. G. St. Pierre Harris, architect and surveyor, Ironmonger Lane, E.C., and Orpington:—

Somerford & Son	£113
W. Owen*	87

* Accepted.

Orpington, Kent.—For the erection of six cottages in Chapel Avenue. Mr. G. St Pierre Harris, architect and surveyor, 8, Ironmonger Lane, E.C., and Orpington:—

H. Somerford & Son	£1,3·7
W. Owen	1,360
T. Knight	1,329
Stebbings & Pannett*	1,311

* Accepted.

Paignton.—For alterations and additions to stables at Primley, for Mr. H. C. Belfield Messrs. Bridgman, A.R.I.B.A., & Bridgman, M.S.A., architects, Torquay and Paignton. Quantities by Mr. Vincent Cattermole Brown, Paignton:—

G. Webber	£1,375
C. & R. E. Drew	1,350
H. Webber & Sons	1,328
E. Westlake	1,230
H. Drew*	1,220

* Accepted with modifications.
[All of Paignton.]

Pontypridd.—For the erection of two villa, Richards Street, Pontypridd, for Mr. J. Moore. Mg. J. Parry Williams, architect, Taff Chambers, Pontypridd:—

E. J. Parfitt	£2,115	9	6
Williams & James	1,741	7	3
E. Jones,* Morgan Street	1,690	0	0
M. Julian	1,597	0	0

* Accepted.

St. Paul's Cray (Kent).—For alterations to the "Bull." Mr. G. St. Pierre Harris, 8, Ironmonger Lane, E.C., and Orpington:—

H. M. Glassup	£125	0
Somerford & Son	84	0
T. Knight	83	17
Stebbings & Pannett*	73	0

* Accepted.

Sheffield.—For the erection of a University College, Sheffield. Messrs. Gibbs & Flockton, architects, 15, St. James' Row, Sheffield:—

W. Hopkins, Birmingham	£105,500
G. Carr	70,610
Willcock & Co., Wolverhampton	68,000
J. Hutchinson & Son, Nottingham	67,790
Hodson & Son, Nottingham	65,599
T. Roper & Sons	65,093
Armitage & Hodgson, Leeds	64,781
J. Eshelby & Son	64,300
Dawson & Jones, Huddersfield and Sheffield	63,370
G. Longden & Son, Ltd.	61,542
Ash, Son & Biggin	61,180
Watt Brothers, West Hartlepool	61,063
Shillito & Son, Bury St. Edmunds	61,000
J. Fidler,* Sheffield and Eckington	60,500

* Accepted. [Rest of Sheffield.]

Sleaford (Lincs).—For the erection of additional offices for Sleaford Rural District Council. Mr. W. B. Marsden surveyor to the Council:—

W. H. Maxey & Sons, Sleaford	£708	0	0
H. Rose & Son, Sleaford	700	0	0
J. J. Banks, Sleaford	693	12	0
Bools & Chantree, Sleaford	6·5	0	0
W. J. Berry, Sleaford	658	19	5
Frank Pattinson,* Ruskington	667	16	1

* Accepted.

Stratford, E.—For repairs and decorations to Conference Hall, Stratford. Messrs. George Baines, F.R.I.B.A. and R. Palmer Baines, architects, 5, Clement's Inn, Strand, London, W.C.:—

W. O. Collingwood & Co.	£731	3
G. J. Hosking	581	15
James Baxter	513	0
Fowler Brothers,* High Street, Stratford, E.	499	0

* Accepted.

Sutton (Surrey).—For additions to a private house. Mr. G. St. Pierre Harris, architect and surveyor, 8, Ironmonger Lane, E.C., and Orpington:—

W. M. Dabbs & Son	£263	0
J. J. Shopland	250	0
E. J. Burnand	236	15
J. B. Potter*	236	10

* Accepted.

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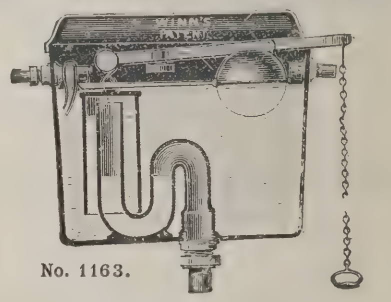

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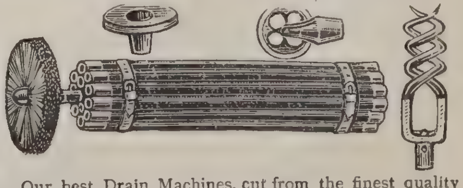

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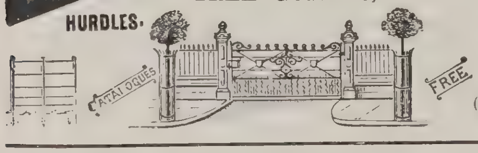

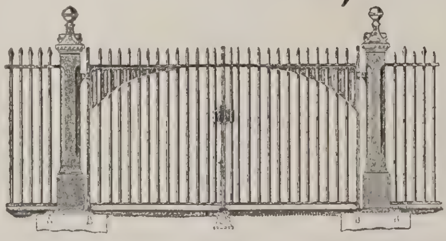

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THE

BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

July 29, 1903. Vol. 17, No. 442. 9, East Harding Street, E.C.

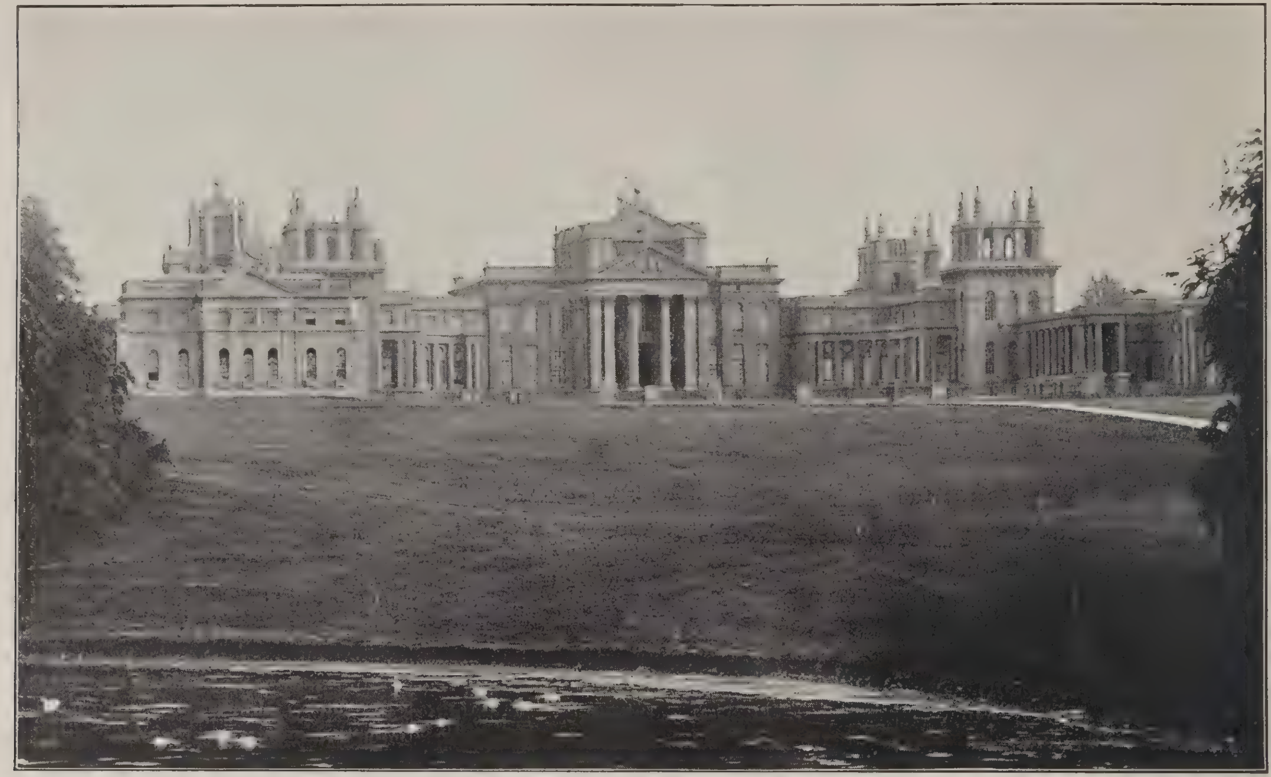
The Queen Victoria Memorial. THE preparation of the site for the National Memorial to Queen Victoria is now well in hand, a start having been made on Tuesday last week. The semicircle in front of Buckingham Palace has been struck, and it is hoped that a good portion of the levelling will be finished during the absence of the Court; the work is arranged to be completed by the beginning of November. The details of the scheme have already been published in this journal and readers will remember the "Queen's Garden" which has now been commenced: it will also be remembered that the work proposed includes the levelling up of the ground that slopes down to the lake in St. James's Park and the building of a retaining wall next the water. The present contract also includes the construction of a new footpath across the Green Park from the memorial, with an outlet opposite the Naval and Military Club in Piccadilly. Eventually the fence at the left side of the Mall as one faces the Palace will be set back some distance, and the fence on the Piccadilly side moved forward so as to bring this fine avenue into direct line with the memorial and with the Palace frontage. Two changes have however been made since the scheme was last before the public. The carriageway outside the semi-circular colonnade has been abandoned and low iron railings have been substituted for the admirable stone screen shown in front of the Palace in the original design. The traffic will therefore pass in front of the Palace much as it does now. We regret that these changes have been made, for they greatly detract from the appearance of the scheme. We cannot think that they have been dictated by any other motives than those of cost. With the memorial itself Mr. Brock is now busy, but it must necessarily be a long time before the work is finished: no fewer than twenty-five figures are included in it, so that the sculptor has a great task to accomplish. While referring to this matter it is opportune to note that the London County Council, by arrangement with the Office of Works, has undertaken to settle with the leaseholders whose premises are required for the making of the "triumphal avenue" that will lead from the Memorial to Charing Cross and will carry out the work of demolition and construction so as complete the road this summer: in exchange for which the Council will be allowed to acquire on very favourable terms the building where they now hold their meetings, and as much of the roadway and old Admiralty buildings as may be needed—for the new county hall. So here at last is to be their Elysium: certainly an admirable one after the ridiculous proposals which have emanated from Spring Gardens within the last few years. It is understood that the new building will follow the line of Carlton House Terrace.

Trafalgar Square. LAST Wednesday the "Daily Chronicle" published a large illustration of "Trafalgar Square—as it should be"; showing the place laid out with flower-beds and grass plots. The idea has of course been mooted many times, and we should have no occasion to refer to it now were it not for the fact that the manner of laying-out the Square as suggested by the "Chronicle"—and as most people have it in their mind's eye—would quite spoil its appearance. There can be no doubt that the present wilderness of stone is unsatisfactory, but it would be making matters worse to splutter garden plots and fancy beds over it. The result would be finicking and quite out of keeping with the column that dominates the spot. If anything is done it should be with an eye for breadth of effect. We want no gardener's finery or toy flower beds, but a restful lawn over the whole area, relieved with harmonious masses of colour in a few places only.

The Martyrs' Memorial at Oxford. AN alarmist statement was recently circulated respecting the ruinous condition of the Martyrs' Memorial at Oxford. We are glad therefore to note that Mr. Horace E. Clayton, the vicar of St. Mary Magdalene's, Oxford, asserts there is no need for any alarm about the stability of the memorial, which is clearly apparent from the report of the architect, Mr. H. W. Moore, F.R.I.B.A. Everyone who has examined this beautiful monument, says Mr. Moore, will know that it is a solid structure, arranged in an hexagonal form, with a base of about 14ft. diameter, raised upon a stepped platform spreading to about 31ft. diameter. The monument is built on such practical lines, starting from a solid base and tapering in a pyramidal form to a height of over 70ft. in stages most gracefully proportioned, that it must be apparent to all that it cannot collapse. The kind of decay which may be described as the crumbling process has begun to manifest itself on the surface. Some few of the richly-worked stones have fallen, but only those who are specially looking for defects would discern the vacant places. It is quite possible that other pieces of the enrichments may fall at intervals, but should they do so they will drop within the railed enclosure without any risk to passers-by. The facework has scaled in places owing to the weather, but so slightly that there can be no reason for anxiety; the drapery of the figures also shows signs of perishing; further, there is an incrustation of dust in the clefts and crannies of the ornamental work which might suggest further decay. "From my examination there appear to be no signs of inherent weakness in the structure; the defects noted are but superficial, readily admitting of repair when the proper time comes. My opinion is that it is premature to contemplate anything like a general restoration of the monument at the present time; it can be safely postponed for some years to come. The only recommendations which I would now make are (1) that the steps forming the platform (some of which have slipped out of place) should be reinstated; and (2) that the gutter running behind the parapet of the first stage should be thoroughly cleaned and rendered watertight. The suggestion that the monument is in a 'ruinous' condition is nothing else than an exaggeration."

The Porched House, Southover. IT is rumoured that the Porched House at Southover, near Lewes, which is said to have been the residence of Anne of Cleves, the divorced wife of Henry VIII., is about to be pulled down and replaced by a row of cottages. It is not certain whether Anne of Cleves occupied the house, but it is not improbable she did, as the Manor of Southover was assigned to her by Henry VIII. on January 20th, 1541, and according to Mark Antony Lower, the historian of Lewes, a competent authority, the house is of that date, the porch having been erected in 1599 by one of the Shelley family, whose initials it bears.

The late Mr. Penrose. PERMISSION having been given by the Dean and Chapter, the Council of the Institute propose to erect a tablet to the memory of the late F. C. Penrose in the crypt of St. Paul's Cathedral. This tablet will be of Istrian stone and the inscription on it will include—"Architect, Antiquary and Astronomer; a profound Scholar; Author of the *Principles of Athenian Architecture*, whose distinguished services in revealing the refinements of Greek Architecture are here commemorated by his professional friends and admirers." Any members wishing to share in the expenses of the memorial should address their communications to the secretary, 9, Conduit Street, Regent Street, W.



BLENHEIM PALACE: NORTH FRONT FROM LAKE. SIR JOHN VANBRUGH, ARCHITECT.

SIR JOHN VANBRUGH.*

SOLDIER, COURTIER, DRAMATIST AND ARCHITECT.

By D. A. BEVERIDGE.

THE policy of the Duke of Alva in the Netherlands was one of great cruelty, and among the many Protestants who left the land of their birth and passed over to England was the grandfather of the subject of this memoir. He was a native of Ghent, and evidently a man of considerable means, for on his death his son, Giles Vanbrugh, was left in fairly affluent circumstances.

Several authorities state that Giles was a sugar baker in Chester, but this is not at all likely, for in Blome's "Britannica" he is described as gentleman, and we have definite knowledge that he was comptroller of the Treasury Chamber. He married Elizabeth, the daughter of Sir Dudley Carelton (nephew of Lord Dorchester), of Imber Court, Surrey. It is not known when he received the appointment of comptroller, but very probably this was obtained after his marriage, through the interest of friends acting on his behalf.

John Vanbrugh was the second son of the marriage, and he was born in the parish of St. Nicholas Acons in the year 1664. Little is known regarding his education, but he appears to have received part of it at Chester Grammar School. He was sent to France when nineteen years of age, but whether to study architecture or other things is not known; no doubt the language and foreign travel would be the primary objects of his tour. (France at this time was in the height of her prosperity, Louis XIV. being on the throne.)

He was abroad for two years, and on his return received a commission in the Earl of Huntingdon's regiment, formed a few months before his arrival. Five years afterwards Vanbrugh was apprehended at Calais on the supposed charge of sketching fortifications, and also of travelling without a passport. He was at this time about twenty-six years of age. When he had had eighteen months' imprisonment, and after being rather badly treated, he was transferred to the Bastille. In this grim abode he was allowed more freedom, and, it is said, spent much of his enforced leisure in drafting comedies. Whatever was the reason of his imprisonment, he appears to have been set at liberty about November 22nd, 1692, after having spent more than two years in prison. He joined his old regiment and attained the rank of captain, so that until receiving the knighthood he was always known as Captain Vanbrugh.

During his military career he became acquainted with Sir Thomas Skipworth, who was a shareholder in Drury Lane Theatre, and no doubt they had many discussions on the drama. Vanbrugh was evidently encouraged in his writings after having shown some of his productions (several scenes from the "Provoked Wife"), but nothing was staged until several years later.

In 1695 Vanbrugh was made secretary to the Greenwich Hospital Commission, through Evelyn's "nomination of him to the Lords." The Commissioners were appointed to report on the state of the palace and the sum required for its conversion into a hospital.

The production of Cibber's "Love's Last Shift" in January, 1696, inspired Vanbrugh to give a comedy to the stage, and the result was "The Relapse, or Virtue in Danger," a sequel to the afore-mentioned play. It was produced at Drury Lane, was very well received, and had a success the theatre was much in need of.

The Italian Opera House, of which Vanbrugh was architect and manager, and author of many of the plays produced there, was opened in April, 1705, the foundation-stone having been laid by Lady Sunderland, daughter of the Duke of Marlborough. The building was built with the help of his wealthy friends, and it may be mentioned in passing that Vanbrugh always retained the firm friendship and goodwill of the many noblemen and gentlemen with whom he came in contact during his architectural career. The Opera House was not adapted for sound—being better for song than for dialogue—and the piece was withdrawn after it had been on the boards for about a fortnight. It is not clear whether anything was done to improve matters.

Vanbrugh lost some money by this venture, for according to a letter to the Earl of Manchester he remarked that "he was glad to get rid of it (the theatre), but trusted better days were in store for the drama." His plays were lacking in originality, but he excelled in wit and the happy balance of parts. "The Relapse," "Provoked Wife" and "The Confederacy" are accounted his best. "The Journey to London" was left unfinished at his death, but was re-cast by Colley Cibber, and remained a great favourite with the play-going public.

Vanbrugh may be classed among his contemporaries Congreve, Wycherley and Farquhar, who among them developed the "Comedy of Manners" or "The Artificial Comedy," the source of many of Sheridan's and Goldsmith's best plays. Voltaire praised Vanbrugh for being the gayest, Congreve the wittiest, and Wycherley the strongest of the English playwrights.

Perhaps the same lack of fusion in his plays might be traced to a lesser extent in his architecture. Being a man not influenced by precedent in any way, and not liable to do things by halves, he unfortunately incurred the ire of many people of his time who were great sticklers for precedent and disliked novelty in any shape or form.

Swift wrote:

> Van's genius without thought or lecture
> Is hugely turned to architecture.

It is not at all clear why or how Vanbrugh turned his thoughts to architecture. Possibly, and very probably, he started with a small mansion, and finding he had a certain talent for design, decided to pursue it; it being customary for gentlemen in those days to dabble in many arts.

Castle Howard.

His first known work was Castle Howard in Yorkshire, for Charles, the third Earl of Carlisle. It was begun in 1701 (in the thirty-sixth year of his age), and stands on the site of the ancient Castle of Hinderskelf. The position is by no means a commanding one, but the building supplies any deficiencies in that respect (an illustration of it was published in THE BUILDERS' JOURNAL for April 8th last). In his large buildings he supported the main block with smaller groups of buildings having nearly always a symmetrical plan and elevation. The design is of a simple nature, but may be truly said to be most monumental. The effect of massing shows that he had a great facility in achieving picturesque results. An arcaded forecourt leads to the main block (with a frontage of 300ft.), having on the one side the kitchen offices and outbuildings, and on the other the stable offices, &c., the total frontage being about 650ft. The hall, 35ft. square by about 60ft. high, is treated with columns of the Corinthian and Composite orders, and is surmounted by a dome adorned with a painting by Pilligrini depicting the "Fall of Phæton." The hall has staircases on either side with access to the saloon, and the principal rooms are all *en suite* to the right and left, overlooking the garden. The plan, though crude in many respects, shows a distinct advance on any previous works, and corridors contribute greatly to the privacy of the various apartments. The garden front is treated with a portico of six columns of the Corinthian order, two storeys high in the centre, with pavilions at either end connected by low wings. The south-east end is crowned by a low stone dome. In Vanbrugh's original design a much more effective treatment than the dome is shown, but cost probably debarred it from being adopted. The pavilion at the other end has a pointed roof instead of a dome, which disturbs not a little the rhythm of the façade; this latter was an alteration carried out when this part was rebuilt in 1763. A curious point about the front is that although the pilasters in the centre run up the two storeys, the same treatment is continued in the wings, which are only one storey in height. Vanbrugh had a great objection to the superimposition of the Orders, and this is one of his favourite arrangements—open no doubt to criticism, especially from an archæological point of view. The dome rises to a height of 100ft., and is well proportioned to the rest of the building, forming a very striking feature for miles around. The rooms are all of stately proportions, although some are rather small.

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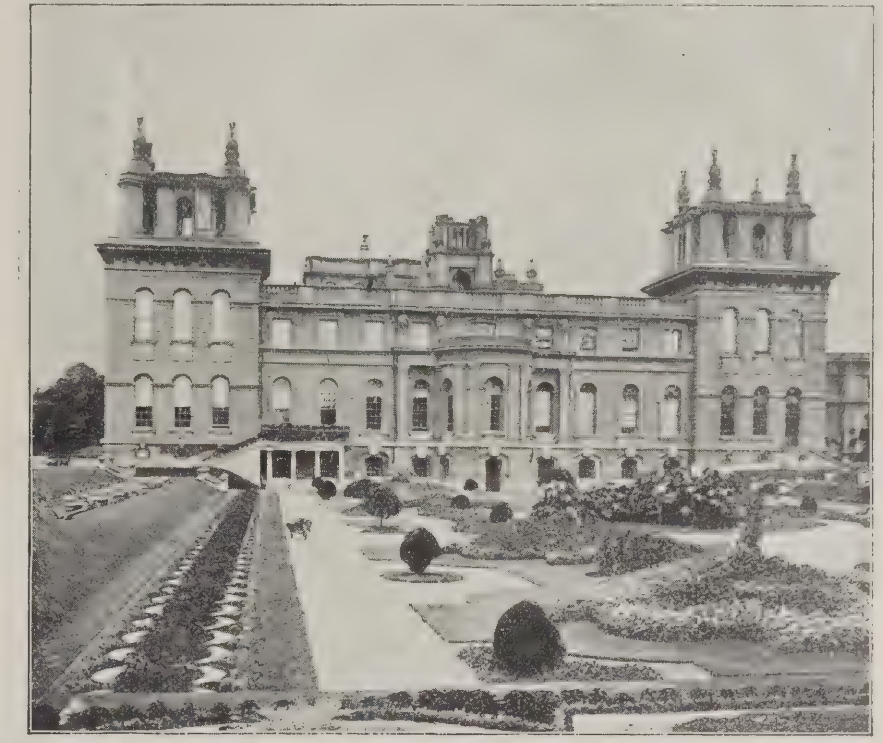
* A paper read before the Liverpool and Edinburgh Architectural Societies.

The plasterwork generally in the various chambers is of an elaborate character, and the cornices and ceilings are mostly enriched. Windows were often made to suit the elevation rather than the plan, and the corridors are lit principally from the courts, which light also many of the rooms. The building covers nearly the same ground as Blenheim, but, with the exception of the main block, it is only one storey in height.

The interior shows the same studied treatment as the exterior, and the master-mind may be traced in the uniform breadth of effect. For picturesqueness of grouping and splendour Castle Howard would be difficult to surpass. Vanbrugh had an undoubted facility for making his buildings "sit well," and they always formed a perfect ensemble with the landscape. He also had a great facility for obtaining light and shade, and anticipated effects which had not been tried previously. The straightforward treatment of the chimneys as necessary adjuncts, instead of things to be hidden under balustrades, merits approval, and the general effect of clustered chimneys with the vases and statues which embellish the south front gives a very rich effect to the skyline. Vanbrugh's work is eminently original in comparison with that of Christopher Wren and Inigo Jones. Compared with the "classic copyists" of his time, he deserves some consideration for his inventive faculty and his hardihood in producing work bound to provoke general discussion, and very often abuse. Vanbrugh's style was his own, and though it is sometimes of rather a heavy nature, yet there is a distinct thoroughness and uniformity always noticeable. The majority of critics will admit that his work is most substantial and built for all time.


BLENHEIM PALACE: EAST FRONT.

Vases, statues and carved keystones were the form of sculpture usually employed by him. At Castle Howard the stone has taken on a beautiful colour, which adds not a little to the charm of the building.

In 1702 Vanbrugh succeeded William Talman in the comptrollership of the Board of Works. In 1703 Sir Godfrey Kneller (who also painted his portrait) instructed him to make plans for a house; it was erected near Hounslow. It is now used as a military school of music, but is not designed in his usual style and has no particular interest, though when seen from a distance the general effect is good. It has rather an early Jacobean look.

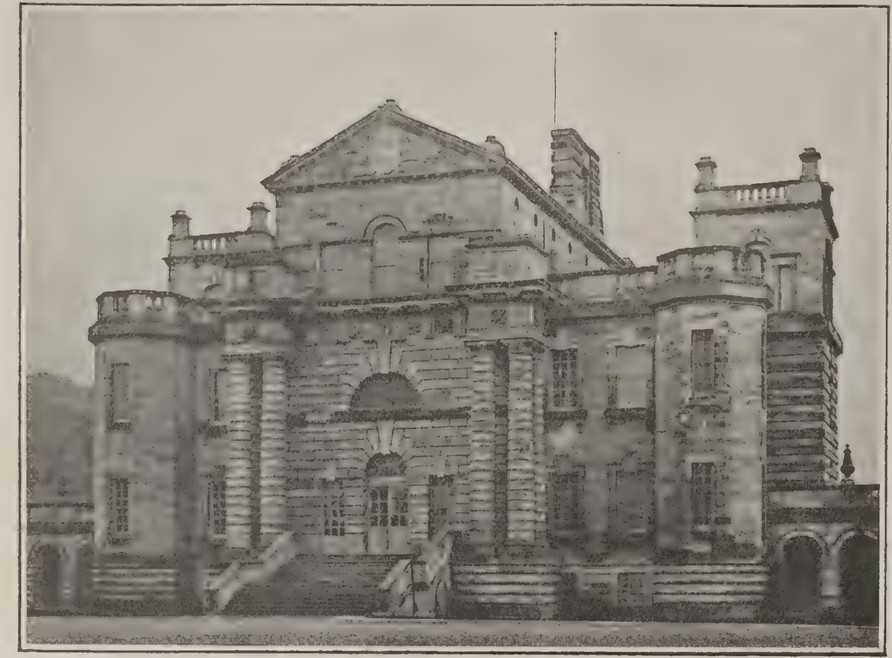
Castle Howard, though begun in 1701, was not finished till 1714. It was regarded with favour by the public, and was also greatly appreciated by the architect's patron, the Earl of Carlisle. The latter having considerable interest as Earl Marshal of England, he presented Vanbrugh with the tabard of Clarencieux King-at-Arms. It was compulsory in accordance with the rules of the College that a king-at-arms should pass through the various grades, and Vanbrugh was appointed Carlisle Herald and promoted Clarencieux a year later (1704).

In 1705 Vanbrugh's own theatre, which he had designed, was opened. It was situated where His Majesty's Theatre now stands, and was a plain building of brick with stone dressings; but the acoustics were seriously defective, as has been already mentioned.

Blenheim.

Castle Howard was the means of his obtaining the post of architect of Blenheim. In June, 1705, Vanbrugh was appointed architect (being forty-one years of age) of the new palace to be built at Woodstock for the Duke of Marlborough, to commemorate his great victory of Blenheim. Parliament appears to have voted a mansion without

TITANIC BRIDGE OVER THE LAKE AT BLENHEIM PALACE. SIR JOHN VANBRUGH, ARCHITECT.



SEATON DELAVAL, NORTHUMBERLAND: ENTRANCE FRONT.
Reproduced, by permission, from Belcher and Macartney's "Later Renaissance Architecture in England," vol. ii.

the necessary funds, but Queen Anne commanded the work to proceed. The first stone was laid by Marlborough himself, the site being near Fair Rosamond's Well in Woodstock Park. The architect wished to retain part of the old manor-house, but was prevented by the Duchess of Marlborough, who was responsible for much of the ill-usage which Vanbrugh subsequently received. By 1710 about £200,000 had been paid towards the erection of the palace, and the Duchess complained of the extravagant nature of the work.

It appears that after Marlborough was recalled from his command things did not go at all well with the building of the palace, and naturally he did not take much interest in a work voted him by those who had wronged him. During the Queen's reign the building proceeded apace. The contractors were not regularly paid, but they did not grumble, as they believed everything would be settled in the end. The Duke himself did not scruple sometimes to meet the demands of the workmen, thinking that all his advances would be made good; but after the death of the Queen in 1714 payment by Government was entirely stopped, and Vanbrugh found himself in a very embarrassing position. He had personally been at considerable expense, and he also found no means of even getting his commission.

"I have the misfortune," he says in a letter to Tonson the bookseller, "of losing, for I now see little hopes of even getting it, near £2,000 due to me for many years' service, plague and trouble at Blenheim, which that wicked old woman of Marlborough is so far from paying me that the Duke, being sued by some of the workmen for work done there, she has turned the due to them upon me, for which I think she ought to be hanged." In another letter he says: "I have prevailed with Sir R. Walpole to help me in a scheme by which I have got my money in spite of the hussey's teeth. My carrying this point enrages her much, and the more so because it is of considerable weight in my small fortune, which she has heartily endeavoured so to destroy as to throw me into an English Bastille there to finish my days." This was in 1725, about a year before his death. Vanbrugh had not been employed latterly on Blenheim, but it was finished in accordance with his design about the year 1724.

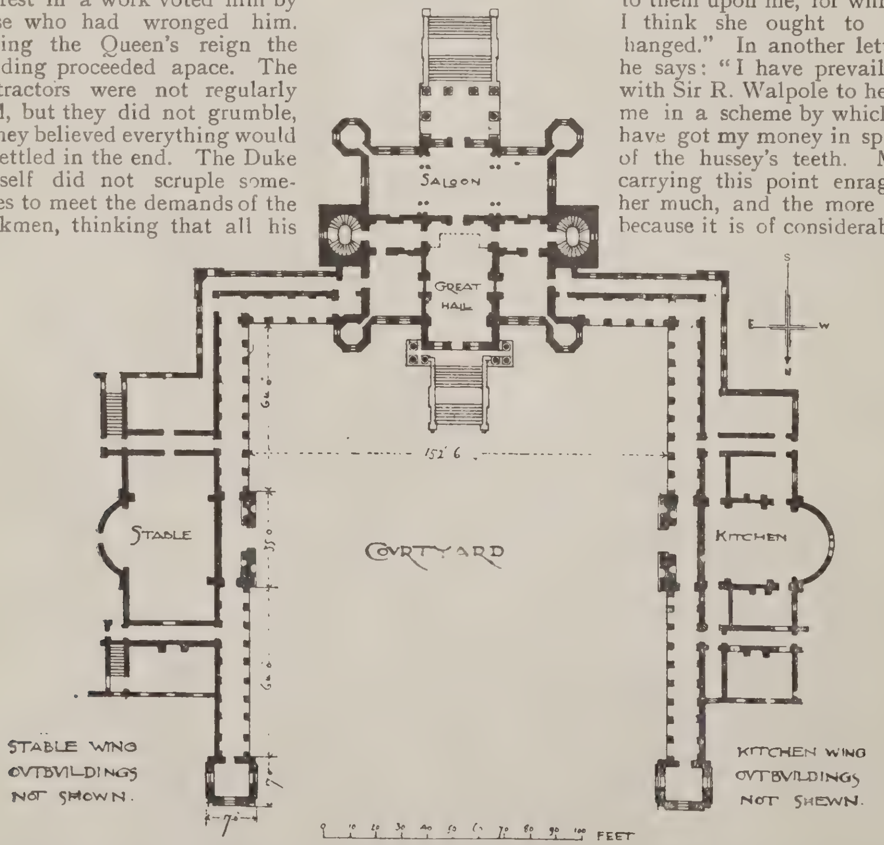
The plan of Blenheim is simpler than Castle Howard, being a main block connected by colonnades with projecting quadrangular wings. The forecourt is treated in a most impressive and monumental manner, and the view from the entrance-gateway towards the house, having the kitchen court on the one side and the stable court on the other, is very fine. The same general arrangement of plan is followed, though simpler, as at Castle Howard, the staircases being on either side of the hall and the principal apartments (state rooms) to the right and left of the saloon overlooking the lawn, with the well-wooded park stretching away in the distance. The hall, 71ft. by 44ft. by 67ft. high, with domed ceiling, is decorated with an allegorical painting of the battle of Blenheim, by Sir James Thornhill (who also painted the cupola of St. Paul's Cathedral, and had great difficulty in getting his fees, receiving only 40s. per sq. yd. for his work). The walls have painted panels by Laguerre illustrative of the various nations. The state apartments are very finely treated, and are hung with beautiful tapestry depicting the various battles and victories of the Duke. The great gallery, or library rather, is 182ft. long, with an organ occupying the bay in the centre. The main block has a frontage to the south of 320ft.; the total frontage being about 856ft. The towers show a distinct falling off in detail as compared with the rest of the buildings, and they lose their bold quality, traceable no doubt to Vanbrugh's services being dispensed with before they were built. The Titanic Bridge of 100ft. span over the lake is a very massive piece of architecture, and is not without beauty; it is really more ornamental than useful. One would expect a splendid entrance to the park, but it is a disappointing one, being of a rather paltry nature and out of keeping with the scale of the mansion. It may be mentioned that the palace cost £300,000, inclusive of £60,000 spent by Marlborough alone—who, as a matter of fact, died without having really occupied the building.

Blenheim is generally supposed to be the most magnificent home in England. It is within easy access of Oxford, and is open to the public on several days of the week. The situation and surroundings are exceptional, and the park, which contains trees more than 500 years old, is of great beauty and considerable extent.

Sir Uredale Price says of Blenheim: "It appears to me that Vanbrugh conceived and executed a very bold and difficult design, that of uniting in one building the beauty and magnificence of the Grecian architecture, the picturesqueness of the Gothic and the massive grandeur of a castle, and that in spite of many faults for which he was justly reproached he has formed in a style truly his own, a well-conceived whole, a mansion worthy of a great prince and a great warrior."

Vanbrugh's Later Works.

After his appointment as architect of Blenheim he was busily employed on various large buildings, principally mansions for the nobility. In 1711 he built the Clarendon Building, Oxford, in collaboration with Nicholas Hawkesmoor. This is chiefly notable for the bold treatment adopted, and is nothing short of masterly, especially the mouldings and details generally. It is thoroughly typical, and is a fair example of his manner of obtaining a monumental effect in a comparatively small building.


SALOON
GREAT HALL
S
E
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N
64' 6"
151' 6"
35' 0"
64' 6"
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7' 0"
STABLE
COURTYARD
KITCHEN
STABLE WING OUTBUILDINGS NOT SHOWN.
KITCHEN WING OUTBUILDINGS NOT SHEWN.
0 10 20 30 40 50 60 70 80 90 100 FEET

GROUND-FLOOR PLAN OF SEATON DELAVAL, NORTHUMBERLAND. DRAWN BY A. STRATTON.
Reproduced, by permission, from Belcher and Macartney's "Later Renaissance Architecture in England," vol. ii.
(B. T. Batsford).

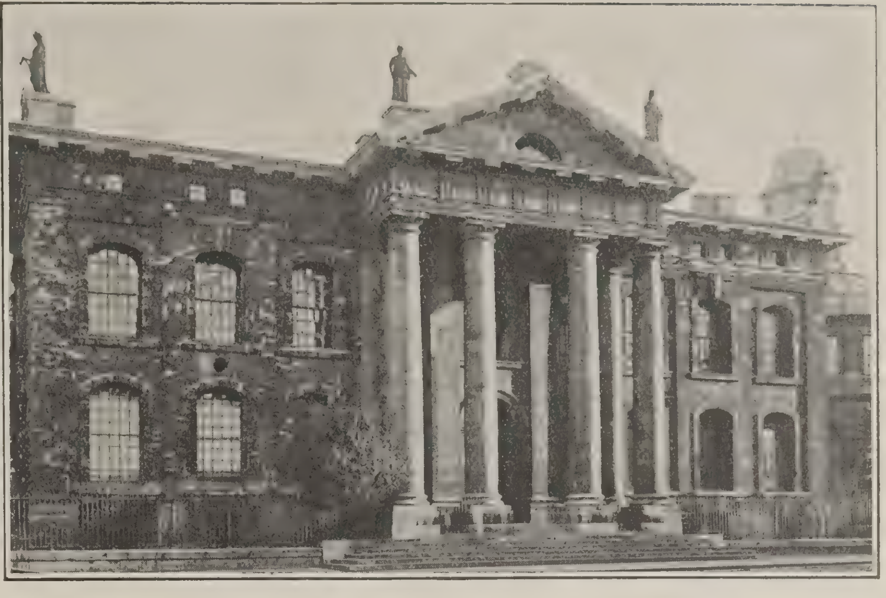
In 1713 he designed Kings Weston, in Gloucestershire, for the Right Hon. Edward Southwell. The plan follows the usual lines, but the exterior is somewhat marred by a line of chimneys treated as an arcade, with detached pedestals above the piers. The hall is 36ft. by 29ft. and 30ft. high, rising two storeys. The whole building is a good example of his powers of design.

In 1714 Vanbrugh was knighted by the new sovereign, George the First, in recognition of his many public services. In 1715 he was reappointed Comptroller to the Board of Works, and shortly afterwards was given the post of architect to Greenwich Hospital.

He built Eastbury, Dorsetshire, in 1716 for the Right Hon. George Doddington, but unfortunately it was pulled down thirty-four years later by the first Earl Temple. It had a front, inclusive of offices, of 370ft., and shows as regards planning that he was steadily improving. The columns (3ft. in diameter) adorning the entrance front were supposed to be the most magnificent in England. It may be observed that his stairs are nearly always in straight flights, and the rooms generally are always well lit and of pleasing proportions. The garden and plantation was laid out on a geometrical plan, and the temple placed at the garden end, facing the house, was a very imposing production, partly no doubt owing to its great size (50ft. by 30ft.). It shows more refinement and leaning to the Italian forms than most of his work.

Oulton Hall, Cheshire, was built about the same time as the above, but possesses no particular interest; moreover, it has been much altered.

His next work, Floors Castle, near Kelso, was built for the Duke of Roxburghe in 1718, but as it was considered of too severe a nature it was altered in 1849, and is now a mansion in the Tudor style.



THE CLARENDON BUILDING OXFORD: NORTH FRONT.

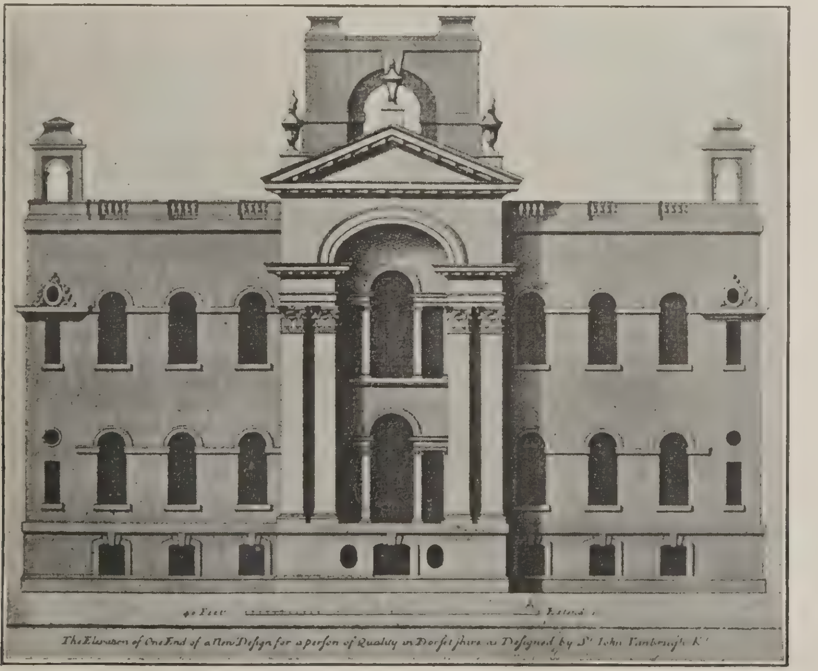
Seaton Delaval, in Northumberland, is situated about eight miles from Newcastle-on-Tyne, and was designed about 1720 for Mr. Delaval. It is approached by an arcaded forecourt 180ft. by 152ft., balanced on the one side by the kitchen wing and outbuildings, and on the other by the stable, offices, &c. Like most of his buildings, this is of a symmetrical character, the house being practically square with octagonal turrets at the corners. The hall is entered from a really splendidly designed portico, and is 44ft. by 25ft. by 30ft. high, with a hanging gallery in stone at one end. Seaton Delaval shows that Vanbrugh was continually advancing in mastery of his art; the details are much more refined, the planning shows more merit, and the rooms, compared with the size of the house, are much larger than he was wont to make them. The stonework is very well wrought, but unfortunately most of the sculpture is gone, the house having been burnt down in 1752. It may be remarked that the south fronts of his buildings were always treated in a more graceful manner than his north façades, which were severe and stately. At the first glance Seaton Delaval is quite unlike what a dwelling-house should be, and one instinctively wonders if the plan is sacrificed to external effects. But after a study of the latter this idea is dispelled, and we return to the elevation with not a litte admiration for the very telling effect produced. The north front is without doubt a very fine composition. The corner towers and the massive chimney heads appear to form the climax of the design, welding it into a perfect whole. This may be taken as thoroughly representative of Vanbrugh, and being one of his later productions it is devoid of many of the faults of his earlier work.

Grimsthorpe, Lincolnshire, was built in 1722–24 for the Duke of Ancaster. The entrance hall is about the largest in England, being 106ft. by 38ft. by 40ft. in height, with staircases at either end. The proportions are much better than at Blenheim or Castle Howard. It it chiefly notable for its rusticated columns $3\frac{1}{2}$ft. in diameter and the very large key blocks used. The main front is very fine, and the columns (rusticated Doric) are similar to those at Seaton Delaval. This was his last important work, and it is only regrettable that he executed such large works in the early part of his career, his later works showing such improvements on his earlier productions.

Vanbrugh was architect of many other buildings of a smaller nature. On pp. 352 and 353 are reproductions of one at Oxford. It is a private residence treated in an extremely bold and masterly fashion. The pilasters running up two storeys is a daring piece of work for such a small building. The result, I think, justified the experiment. The windows have an in-go of 9in., and the lintels have flat arches, owing doubtless to the soft nature of the stone, as a lintel in one stone would be liable to crack.

In 1710, at York (being about forty-five years of age), Vanbrugh married Henrietta Maria, eldest daughter of Col. Yarburgh, of the Foot Guards, and of Snaith Hall, Yorks, his wife being twenty years younger. Lady Mary Montague in one of her letters, and with the youthful ardour of nineteen years, refers to the lady as a "ruin," and she also calls attention to Vanbrugh's steady attendance at all the assemblies. He passed the rest of his life in comparative affluence, and during his comptrollership built for himself a house at Whitehall which was his official residence. The house was taken down as recently as 1898, being for some time occupied as the United Service Institution. It was likened by Swift to a "goose-pie"—however, the "goose-pie" survived 200 years without mishap.

Besides his town house he had two at Blackheath, which are still standing. The "Bastille," on Maze Hill, was probably named from his early association with the place of that name. It is now used as a girls' boarding school. The other house stands on ground known as "Vanbrugh fields."


40 Feet
Extend
The Elevation of One End of a New Deſign for a perſon of Quality in Dorſetſhire as Deſigned by Sr John Vanbrugh Kt

He often resided in Berkshire, near his old friend Tonson, in a letter to whom he says: "I have always found a *tête-à-tête* more pleasing with you there (in Berkshire) than I should have done at Blenheim had the house been my own, though without my Lady Marlborough for my wife in it. For one may find a good deal of pleasure in building a palace for another, when one should find very little in living in it one's self. . . . . . I have likewise had a very hard disappointment in not being made Surveyor of the Works, which I might have had formerly, but refused it out of tenderness to Sir Christopher Wren."

It is interesting to observe that when Blenheim was finished the Duchess refused to admit him to look at his own work, when he was with friends from Castle Howard—his friends were admitted, but he was excluded. "We stayed two nights in Woodstock," he says in a letter, "but there was an order under her Grace's own hand to the servants not to let us enter Blenheim Park."

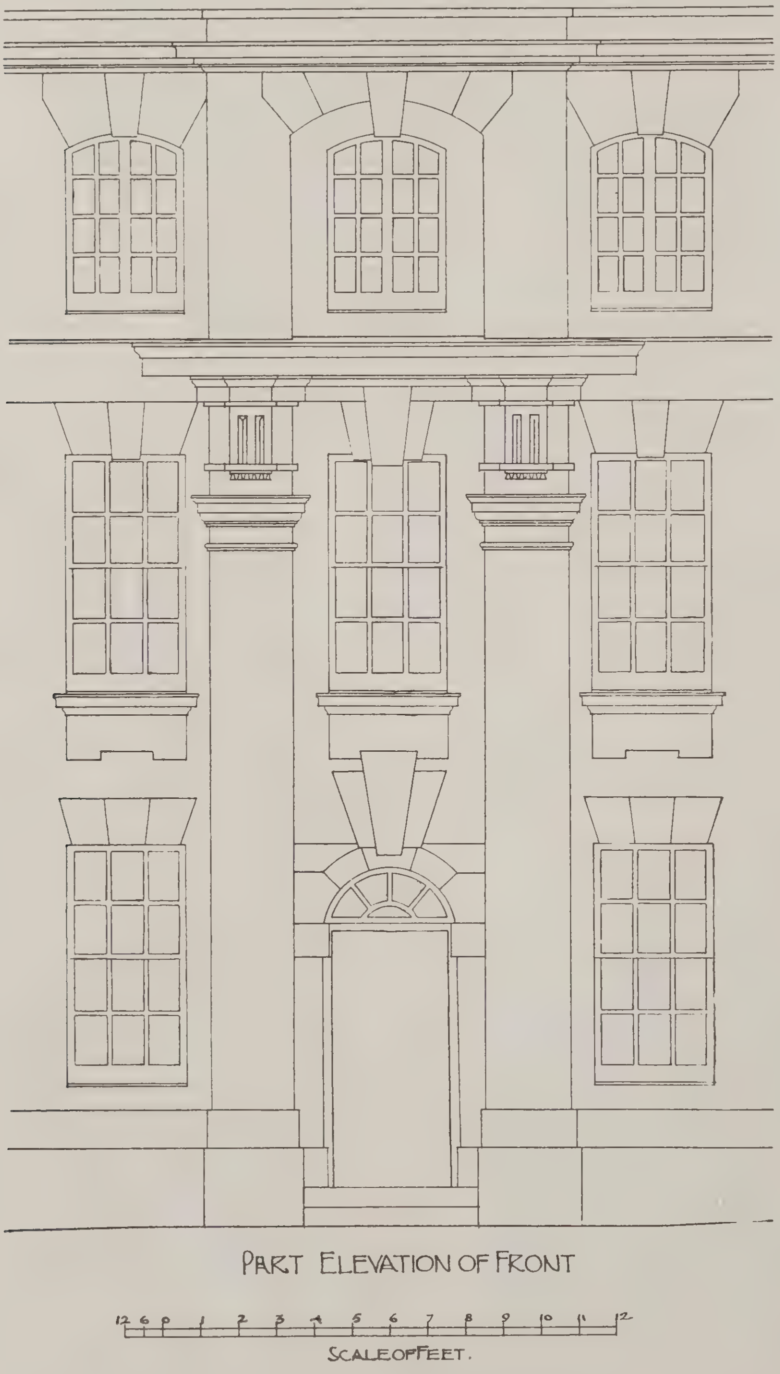
Vanbrugh died of quinsy on March 26th, 1726, at his town house, in his sixty-second year, and was buried in the Vanbrugh vault in St. Stephen's, Walbrook. Lady Vanbrugh survived her husband fifty years. Charles Vanbrugh, their only son, was educated at home and in Switzerland, and afterwards obtained an ensigncy in the Coldstream Guards. He served with his regiment in Flanders, and in 1744 died of wounds received in battle near Tournai.

In Pope and Swift's joint miscellanies of 1727 they apologised and expressed their regret for their raillery, "though ever so tender had ever been indulged, against a man of wit and humour."

The only thing which survived all Dr. Evans's writings and even his name is the famous couplet beginning—

> Under this stone, reader, survey
> Dead Sir John Vanbrugh's house of clay;
> Lie heavy on him, earth! for he
> Laid many heavy loads on thee!

Vanbrugh may, I think, be considered as the greatest architect of the reigns of Queen Anne and George I. His later designs for buildings and writings for the stage showed that his powers remained as fine as ever to the end.



HOUSE AT OXFORD. SIR JOHN VANBRUGH, ARCHITECT.

THE BUILDING TRADE IN SOUTH AFRICA.

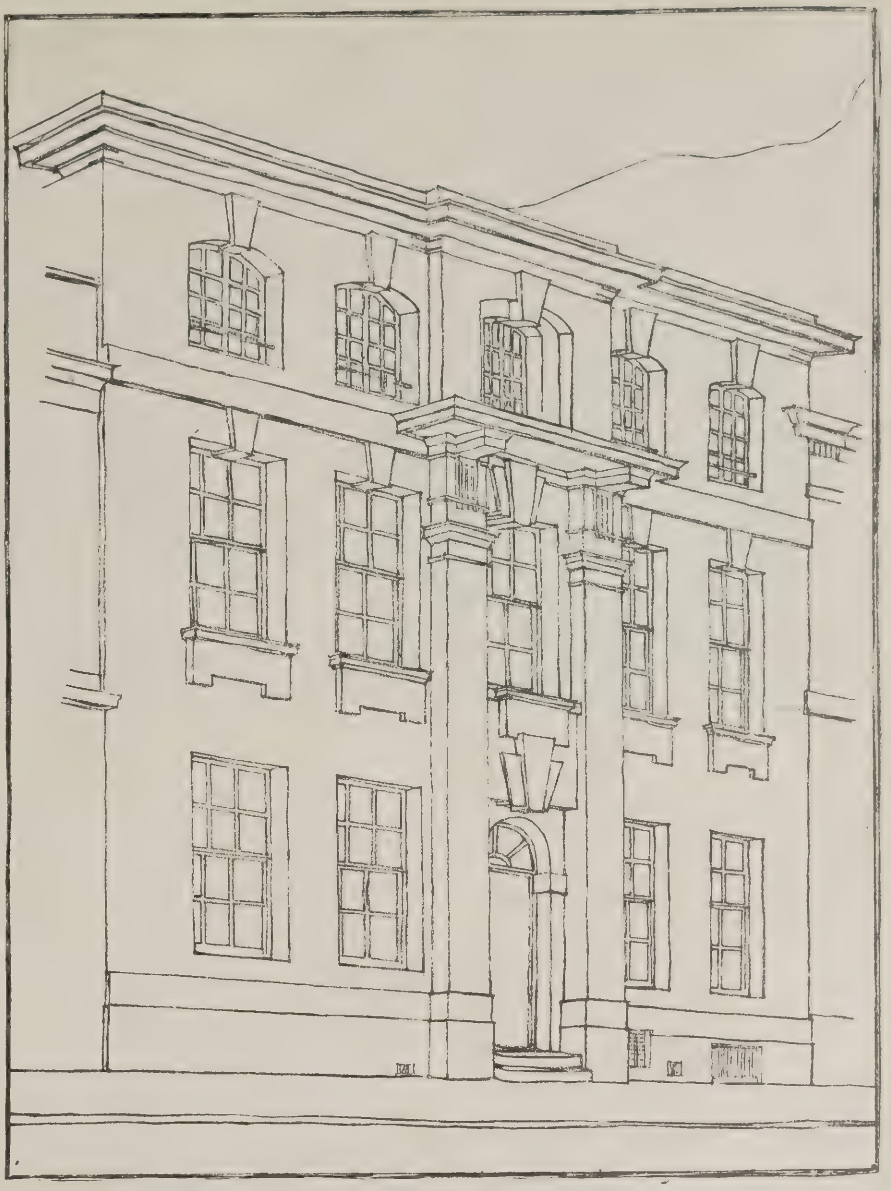
WHILE several statements have appeared in home papers pointing out the shortage of workmen which the building trade in Cape Town, Durban and Johannesburg has been experiencing, so far little notice has been taken of the needs of Port Elizabeth. We have therefore been requested to publish the following communication:—

In common with the rest of South Africa the building trade in Port Elizabeth is extremely brisk, despite the great and increasing advance in the cost of labour and the difficulty in obtaining good men. All the builders in the town have their hands full of work—so much so, in fact, that architects have the greatest difficulty in obtaining tenders for contemplated buildings; for jobs of any size or importance an average number of tenders is about three or four, whilst the time required by the tenderers for completion of works is fully one-third more than was formerly the case, and the price nearly double.

A number of large buildings are now in course of erection or completion in the town, including the new premises for the Bank of Africa, a terra-cotta building of which Mr. W. H. Stucke, of Johannesburg, is the architect; a seven-storey building in Main Street for Messrs. Cuthbert, of which Messrs. Hubert Walker & Tomlinson are the architects; a large block of residential chambers and shops facing the Donkin Reserve; a three-storey island block of warehouses for the Harbour Commissioners, and the new administrative offices for the same body (Messrs. Victor T. Jones and W. J. McWilliams being the architects for the three latter); as well as numerous other warehouses and buildings of a less important character; while the erection of several "skyscrapers" is also contemplated.

The projected scheme of the Harbour Board for a new harbour and wharves on a huge scale at the mouth of the Zwartkops River will undoubtedly cause a demand for new warehouses, &c., in that quarter of the town, and in general the prospects of the trade in Port Elizabeth are extremely good if labour can only be procured in sufficient quantity to enable work to go on in a more rapid and economical manner. The increase in the wages of workmen owing to their scarcity is of course the principal factor in the present high prices of building work. Whereas in June last year carpenters were asking 1s 5d. and bricklayers 1s. 4d. per hour, in the same month this year carpenters were obtaining 2s. 3d. and bricklayers 2s. and 2s. 1d., many being only half-competent men at that. Bricklaying is largely in the hands of the Malays, although lately a few London and Australian bricklayers have been specially brought out by the contractors for two of the largest jobs. The permanent barracks and camps being built up country for the military authorities have drained the coast towns of men, as much as 2s. 6d. an hour being paid to carpenters by the contractors for these works; indeed, when tendering for work in Port Elizabeth builders are already allowing for a probable increase in prices to that extent. That this town is worse off for workmen than either Cape Town or Durban is due to the fact that no line of steamers sails direct to it, while men coming to the country leave the boat usually at the first port of arrival, generally with the idea of proceeding to the Rand. Workmen who contemplate emigrating to South Africa could not do better, therefore, than to make for Port Elizabeth, any respectable man being certain of employment at good wages, while the cost of living, compared with that of other South African towns, is fairly moderate. Contractors with a little capital would also probably do well, as those now in the town are almost overburdened with work.

Builders' Notes.



HOUSE AT OXFORD. SIR JOHN VANBRUGH, ARCHITECT.

The Additions to the Borough Sanatorium, Sunderland, are being warmed and ventilated by means of Shorland's patent Manchester stoves with descending smoke flues, those previously supplied having proved satisfactory.

New Electric Cranes at Dover.—In connection with the improvements at the port of Dover for shortening the cross-channel passage two new electric cranes have just been installed. These cranes, the equipment of which has cost £11,000, are exceptionally large and powerful, and have been constructed to the design of Sir William Preece and Messrs. Siemens.

Standardization, which has recently come to the fore in connection with steel sections, is not so very unusual a thing. Of the standardization of screw threads everybody has heard, but perhaps all do not know that the ladder is "standardized." Every hodmen in England knows what he has to step when toiling up the builder's ladder, though he may not know it is 7in. The sailor who runs up the ratlines has 12in. as a step, and that makes a run possible. And the firemen's ladder is crossed with exact equivalence to the ratlines, for firemen are generally sailors.

Education for Plumbers.—A "Report on the Working of Plumbers' Classes" has been published by the Lancashire County Council, which affords an example of a systematic and successful attempt at technical instruction in a particular industry carried out on a practical basis for a series of years. The National Association of Master Plumbers has adopted a form of indenture for apprentices, containing covenants requiring the apprentices to attend evening courses of technical instruction and to present themselves for examination annually, with a view to ultimately qualify for registration. Under this form of indenture the ordinary term of seven years may be reduced to five years, provided the apprentice has previously pursued his education to fit him for his trade at a technical school, on conditions varying according to localities.

Opening up East London.—A communication having been received by the officials of Stepney Borough from the Royal Commission on London Traffic as to how congestion in the traffic in the district could best be mitigated, the borough engineer, Mr. W. M. Jameson, has prepared and forwarded a report, in which he points out that one of the sources of congestion is the passing over of the tramcars at the Aldgate terminus. Another source of trouble is the Jews' market in Middlesex Street, which is the nearest 'bus route from the south of London to Liverpool Street Station. The engineer suggests that Commercial Road in the vicinity of Britannia Bridge should be widened, that roads leading to the docks and wharves should be widened, that the East London Railway Company should be called on to electrify their line and provide hydraulic lifts at their stations, that the dock companies should be requested to modernize their swing bridges, which are at present a great source of obstruction to traffic, and that Cable Street and adjacent streets should be widened so as to allow tramways to be laid along them.

London County Council.—At last week's meeting of the Council Lord Rosebery's proposal for further provision in London for advanced technological teaching and research was approved and a grant of £20,000 a year agreed to.—It was decided to appropriate, at a cost of £30,000, a site in Southampton Row for the proposed London Day Training College. This site is next to that already allocated for the Central School of Arts and Crafts.—It was decided that the Council should seek power next session to construct new tramways of a total length of about 29½ miles, and the doubling and reconstruction of existing tramways of a total length of 3¾ miles, at an estimated cost of about £1,580,325. Amongst the tramways proposed are lines from Hampstead Road, along Tottenham Court Road, to Oxford Street; from Westminster Bridge Road, *via* Victoria Embankment, to the north side of the Strand; from the Marble Arch to Cricklewood; and through the Blackwall Tunnel.—The Council passed an estimate of £4,250 for the annual repair of the Victoria Embankment. The work is to occupy not less than a month, and is to be carried on night and day, Sundays as well as week-days.

Norwegian Slate.—The importation of Norwegian granite into Aberdeen is now a well-established trade; but the resources of Norway are being still further developed, and Aberdeen will to some extent reap the benefit of this; for the sole agency in Scotland for a Norwegian slate which, it is contended, is superior in every respect to the Welsh slate has been secured for Aberdeen by Mr. Alexander Murray, of King Street, and Mr. Charles Maitland, of Union Grove. The slates, which are obtained from a quarry at Voss, are of two colours, green and grey. On the Vossebygden there are whole mountains of slates, quite sufficient to slate every house in Norway and leave an abundant supply for export. In spite of this, however, it is not many years since Norway imported considerable quantities of slates from the quarries in Wales, not knowing that there was such a plentiful supply at hand until Mr. Christensen commenced the development of the quarries on the Vossebygden. Cargoes are shipped from Bergen. The distance from Bergen to Aberdeen is only about half that from Port Dinorwic to Aberdeen; and although the Norwegian slates have at present to be conveyed eighty miles by rail to Bergen, a new pier which is to be constructed at another part of the coast will lessen the railway journey by half, thus reducing the cost of transit.

Messrs. G. B. Kent & Sons, Ltd., of 75, Farringdon Road, London, E.C., have been established for more than a century and a quarter, and are among the most respected of firms. Their reputation, however, is not based merely on length of years, but on the reliability of the brushes they make. The new catalogue of the firm, now before us, comprises all kinds of brushes, exclusive of painters' brushes, which are dealt with in a special catalogue.

Change of Address. — Owing to an extensive fire that occurred at their late premises at Regent's Park, Messrs. G. R. McKenzie & Co., Ltd., timber merchants, shop and office fitters, &c., are transferring their business to a more commodious building at Queen's Road Station, Battersea, London, S.W. These works, besides being much larger, will be fitted with the latest up-to-date machinery and appliances, which will enable Messrs. McKenzie to execute all orders with the utmost promptitude.

CULTON HALL CHESHIRE.

Enquiries Answered.

The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Enforcing Detailed Account of Street Works.

BURY.—R. G. R. writes: "Can one enforce a detailed account from an urban district council for private street improvements after the receipt of the final apportionment? Works carried out under the 150th section of P.H.A. 1875"

We are of opinion that under ordinary circumstances you cannot. T. E. C.

Ancient Lights.

DEVONPORT.—E. M. L. writes: "I should be glad of an opinion on the right of light on the accompanying plan (not reproduced). My client desires to raise a new building above an old building, as shown."

It would be well to come to terms with the adjoining owner, whose right of light would be undoubtedly interfered with by the proposed addition. In the event of an action being contested he might not secure very heavy damages, but he could give a great deal of trouble, and might even obtain an injunction against the proposed building at some awkward moment. G. A. T. M.

Comparative Cost of Floors.

LONDON, S.E.—SUBSCRIBER writes: "What is the approximate difference in cost per square between a floor composed of rolled steel joists and concrete 8in. thick finished with an even surface, and a floor composed of red deal joists, binders and 1½in. floorboards? The floor in each case has to carry the same weight."

A concrete floor with steel joists would probably cost about one-third more than a wooden floor for the same span and weight-carrying capacity. T. E. C.

London Buildings.

BRISTOL.—PROV. PROB. writes: "I purpose to spend a few days in London next month. What buildings and museums would be most profitable to visit in preparation for the R.I.B.A. intermediate examination? How is admission obtained to the Architectural Museum, and is it still in Tufton Street?"

You should, of course, visit St. Paul's Cathedral and Westminster Abbey, some of the City churches—such as St. Stephen's, Walbrook—St. Mary-le-Strand, Somerset House (from the inner court as well as from the Strand), the National Gallery, the Houses of Parliament and similar well-known buildings; and it would be good for you to take special note of modern work, such as New Scotland Yard, Westminster Cathedral (which is close to Victoria Station), the Imperial Institute at South Kensington, &c. In a few days you cannot expect to do more than just see the main parts of these buildings. As to museums, the architectural and sculptural fragments in the British Museum should of necessity be seen, and you will also find it of advantage to visit South Kensington Museum, the Soane Museum in Lincoln's Inn Fields (open free from 11 to 5 on Tuesdays, Wednesdays, Thursdays and Fridays during March, April, May, June, July and August), the Museum of Practical Geology in Jermyn Street (10 to 5), Parke's Museum at the Sanitary Institute, 74A, Margaret Street, Regent Street, W. (10 to 6), and the architectural courts at the Crystal Palace. The Royal Architectural Museum is still at 18, Tufton Street, Westminster, S.W., but it is now closed whilst the alterations to the building preparatory to its use by the Architectural Association are being carried out under the direction of Mr. Leonard Stokes, F.R.I.B.A. It will not be re-opened to the public till next April. Hitherto it was open from 10 to 4.

Duplicating.

LLANGOLLEN.—X. X. writes: "Which is the best copying process for quantities, specifications, &c.?—one requiring no expert knowledge, and reasonable in price."

There are many duplicating systems on the market. A very simple one is the hectograph, consisting of a slab for the most part of gelatine, on which the writing (in strong aniline ink) is impressed. Soak ½lb. of gelatine in water till it is flaccid, melt in a water-bath with some common glycerine, heat for an hour or so to drive off all excess of water, then pour into trays ½in. deep. To take copies it is only necessary to lay the sheets on the surface and press them down evenly. Similar results are obtainable with a putty-like composition. Only a limited number of copies, however, can be obtained—say twenty-five. For large numbers of copies a duplicator like the "Neo-Cyclostyle" could be used. Sun-prints on blue paper might also be taken, writing the original on thin tracing paper. Lithography is the most satisfactory process, but considerably more expensive. Printing is, of course, more expensive still, unless a very large number of copies is required.

Cubing Library Building.

SALISBURY.—CYMRO writes: "What would be a reasonable price to cube a library building costing about £4,000 (1) with fittings, (2) without fittings?"

(1) 6d. (2) 8d.

Penalties against Contractor.

CARDIFF.—LIGHT writes: "If, without just cause, a contractor is much over his time in completing a contract, and it is decided to enforce the penalty, should the amount of the architect's final certificate be less the amount of the penalty, or should the architect certify in full and state on the certificate that the amount is subject to the deduction, by the building owner, of the amount of the penalty? The form of contract and conditions is the R.I.B.A. form."

The architect is the agent of the client and is therefore entitled, if he receives instructions from the client, to grant a certificate for the amount due, *i.e.*, with the penalty deducted.

Guaranteeing Accuracy of Quantities.

SOUTH DEVON.—WATERWORKS writes: "I prepared drawings and quantities for a proposed water scheme for a public body, but unfortunately the relations between the chairman and myself are somewhat strained. A friend has suggested that probably it would be more satisfactory for all concerned if the public body paid me an agreed sum of money for what I have done, and employed someone else to carry out the scheme, making use of my drawings and quantities. The chairman is agreeable on condition that I guarantee the accuracy of the quantities. Should I be justified in doing so?"

You would be most unwise to guarantee the accuracy of the bill of quantities, for it is impossible to be quite sure, and any slight variation could then be charged to you. You can, of course, assure them that the quantities are correct to the best of your knowledge and belief, but they have their remedy without any guarantee in being able to prosecute you if they desire for culpable negligence or fraud.

Broken Contracts.

MERE.—J. H. writes: "I drew up a set of plans and specifications for taking down some old premises, which were accepted, and afterwards gave a contract, which was also accepted. An agreement was drawn up. After work had been in progress about three weeks someone else made another set of plans and specifications, and I was asked to give a price for mine. Eventually I was thrown over. What is my position? Can I claim payment in full?"

You can undoubtedly sue for the full amount of the contract if the facts are as you state.

Buildings to Measure around Wakefield.

WAKEFIELD.—J. D. writes: "Please name some buildings within twelve or fifteen miles of Wakefield suitable to measure for the Intermediate Examination of the R.I.B.A."

There is a fine Norman church at Wragley, about five miles from Wakefield. The parish church of Wakefield is a very fine example of Perpendicular work, and on the bridge across the Calder is a good Perpendicular chapel. At Roystone, about six miles from Wakefield, is a very interesting church (Decorated and Perpendicular) erected by the monks of the Cluniac Priory of Monk Bretton. There is an almost perfect list of vicars of Roystone from 1234, when Richard de Wallington was instituted on the presentation of the prior. The church has a very peculiar feature, of which only one other is supposed to exist in England, viz., a chamber with an oriel window half-way up the tower on the west side. It was probably made either to hold a light as a beacon for the guidance of the monks from the monastery to the church or for reading and meditation. There are some well-preserved frescoes over the chancel arch, and a singular monument to Sandford Nevile, 1172. At Monk Bretton, nine miles from Wakefield, there are a few remains of a Cluniac priory with a good Perpendicular gatehouse. Darfield Church is well worth a visit on account of its details (Decorated and Early English), especially the Decorated tracery of the south aisle and clearstory windows. M.

Removing Whitewash on Walling.

COCKERMOUTH.—W. R. S. writes: "How should old whitewash be removed from ordinary hammer-dressed rubble walling?"

Scrape off as much of the whitewash as possible with iron tools, and then use stiff wire brushes with water to remove practically all the remainder. The last traces can be removed by brushing with a weak solution of hydrochloric acid and washing down with clean water.

"Points."

CLOUNE.—BUILDER writes: "I have seen the word 'point' used as a technical term denoting a certain quantity of gas-pipe fixed in houses. What quantity does it represent?"

The term "point," used by gasfitters, merely applies to a point of light, *i.e.*, one burner. It does not represent any fixed quantity of work, but varies according to circumstances. In an ordinary house the amount of gas-pipe does not vary very considerably, nor the labour of fixing. The estimate given you was an all-round sum for the work.

Underground Conveniences.

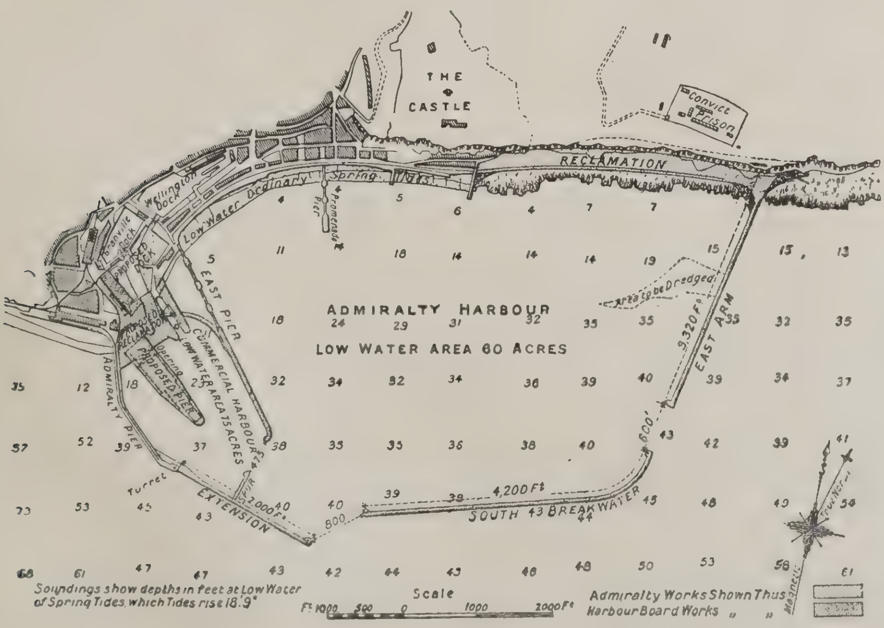
BLACKPOOL.—JARRAH writes: "I am designing some underground conveniences, and desire to know the best method to adopt for floor and ceilings. I think of having a flat ceiling, the steel joists to be encased with and to have 3in. of cement-concrete on the underside, floated smooth and covered with 6in. by 3in. tiles. Would the latter require to be in rebated wood frames in panels, and would the 3in. of concrete casing require strengthening in any way? Do you recommend wire-mesh lathing instead? What are the advantages of trough girders over ordinary steel sections, and what form of trough would you advise?"

The soffit of the concrete should be rendered with a thin coat of lime-putty and afterwards painted. Covering the ceiling with tiles is expensive, and no corresponding advantage would be obtained. Where steel trough decking is adopted, no cross joists are required between the main girders. It is easily erected, forms a water-tight floor of great strength and stiffness, and frequently saves valuable head-room underneath. The particular section of trough decking required must depend on the span and weight to be carried; this, however, can be readily ascertained by referring to the catalogues issued by Messrs. Dorman, Long & Co. (Middlesbrough) and other well-known makers. If necessary, the concrete casing may be strengthened by embedding expanded steel lathing or other similar material within it. A large amount of information, together with detail drawings showing the general construction of underground conveniences, will be found in "Specification" No. 6 (price 5s.), published at these offices. T. E. C.

THE DOVER HARBOUR WORKS.

ON Wednesday last the Society of Engineers visited the works of the new Admiralty harbour at Dover, which were inspected under the guidance of Messrs. Coode, Son & Matthews, the engineers, and Messrs. S. Pearson & Son, Ltd., the contractors.

The nucleus of the present work is the old Admiralty pier, which was completed in 1871 and is 2,000ft. long. In 1895 it was decided (1) that the Admiralty pier should be extended 2,000ft. in an east-south-easterly direction, practically doubling its length; (2) that an east arm commencing a few hundred feet to the east of the eastern boundary wall of the convict prison should be run in a direction approximately south by west for a distance of 3,320ft.; and (3) that an isolated breakwater 4,200ft. in length should run generally west by south and east by north, but turning towards the north at its eastern end, and should form the southern protecting arm. The accompanying plan shows this. The contract for the construction of the harbour was let in 1897 to Messrs. S. Pearson & Son. The total length of the sheltering works to be constructed is 9,520ft. At the present time the Admiralty pier extension and the east arm are nearing completion, and work is just about to be commenced on the southern breakwater. In carrying out this important and interesting undertaking a temporary yard was first formed on the beach in front of the S.E.R. town station. The blocks for the reclamation wall were built at Sandwich, where a large quantity of mixed sand and shingle was obtained. Originally these blocks were brought from Sandwich in lighters, but later a light railway was built, by which they were delivered into the yard direct. Since the reclamation wall was finished the area enclosed by it has been utilized as a block-making yard for the east arm and south breakwater, the ground having been made up by material scraped from the cliffs. Ballast brought from Sandwich by the light railway is lowered down on to electrically-worked gantries running on rails parallel with the cliffs. Cement is also lifted on to these gantries, and the process of making the concrete for the blocks for the east arm is carried on by means of mixers as the gantries move towards the block moulds. For the construction of the masonry breakwaters a grab worked from a powerful goliath crane removes all the loose material overlying the chalk. Another goliath manipulates an exceptionally large diving bell, by means of which the excavation and the levelling of the chalk bed are effected. This part of the work is very heavy, as no block is allowed to be set at a less depth than 3ft. below the surface of the solid chalk. Above water-level they are faced with granite. They vary in weight from 10 to 40 tons, the latter being the size most frequently used. Below low water they are set without mortar, but are well bonded and keyed together by joggles inserted into recesses cored out at the time the blocks are moulded. About low water the blocks are set in Portland cement-mortar and are also keyed with joggles. The estimated cost of the whole work is about £3,500,000.



PLAN OF THE DOVER HARBOUR WORKS, NOW BEING CARRIED OUT.

Keystones.

Liverpool Cathedral.—Lord Salisbury has contributed £1,000 to the fund for the erection of Liverpool Cathedral.

The City of London Corporation have decided to support the suggested setting back of the roadway of the Strand in the L.C.C.'s improvement scheme.

A new Church at Foubridge, Colne, Lancashire, is being erected from designs by Mr. R. Bassnett Preston, A.R.I.B.A., of Manchester.

Three new Board Schools were opened last week in Plumstead. One in Bostall Lane is to accommodate 1,000 children, one in Wickham Lane 600, and one in Church Manorway 900.

The Extension of Camberwell Infirmary, comprising a large block of buildings costing about £200,000, was opened on Friday last. Mr. Edwin T. Hall, F.R.I.B.A., is the architect.

The Royal Victoria Hospital, Belfast, of which Messrs. Henman & Cooper are the architects, was opened on Monday by Their Majesties the King and Queen. The building was illustrated and described in our issue for May 15th, 1901.

A new Board School at Clapham, in the Aristotle Road, Bedford Road, to be called the Haselrigge Road Senior Girls' School, has been erected. There is accommodation for 450 pupils. This is the first school under the Board erected entirely for senior girls.

The Fulham Park Extension was opened recently. It comprises 8 acres 11 roods. The retaining wall built alongside the Thames has cost about £8,000. The whole of the works of design, construction and supervision have been carried out by the borough engineer, Mr F. Wood, A.M.I.C.E.

Radley College.—It is contemplated shortly to enlarge the schoolroom and library at Radley College, Abingdon, from the designs and under the superintendence of the architect for the new wing, Mr. A. H. Ryan-Tenison, F.R.I.B.A., 12, Little College Street, Westminster, S.W.

Mr. W. H. Richards has been appointed principal of the L.C.C. Brixton Technical Institute, which will be opened next session and is intended to be an important centre for instruction in the building trades. Mr. Richards has had wide experience both in practical building work and in teaching building trade subjects.

British Association of Waterworks Engineers.—The eighth annual meeting of this Association was held last week at Bolton. In the course of his address the president (Mr. Robert H. Swindlehurst, M.I.C.E., waterworks engineer, Bolton) referred to the growth of the Association, which has now a total membership of 286. Alluding to water supply, he remarked that while natural filtration through permeable strata was best when it could be obtained, for artificial filtration on a large scale experience had taught them that sand filters formed the most effective means. On Wednesday the Association adopted the final report of the committee appointed to consider the question of the standardization of cast-iron pipes in order to secure the universal adoption of any given standard. The committee reported that it would be desirable to limit the number of sizes standardized to those in common use in this country, the number of classes for each size to be three or less. They did not consider that the metric system of measurement could be conveniently adopted. In their opinion, the next step to be taken was to refer the the whole matter, including their own suggestions, to the Engineering Standards Committee.

Restoration of Rochester Cathedral.—Mr. T. H. Foord, of Acorn House, Rochester, has given £5,000 towards the restoration of Rochester Cathedral, making one stipulation that local builders shall be employed to carry out the work.

A new Convalescent Home at Swansea has been erected in connection with the hospital. Mr. Glendinning Moxham, of Swansea, is the architect. The cost has been about £13,000. The work was carried out by Mr. Griffith Davies.

As a Memorial to the late Dean Farrar, it is proposed to carry into effect his design for filling the west window of the chapter-house of Canterbury Cathedral with coloured glass to match the east window, and to complete certain details in the restoration of the chapter-house.

The Newport (Mon.) Year-Book has just been published, price 3s. 6d. (Mr. Samuel D. Williams, secretary of the Incorporated Chamber of Commerce, Newport). It contains a number of illustrations of the chief buildings in the town, as well as particulars of local industries and firms.

Court of Common Council.—At last week's meeting some by-laws in regard to the demolition of buildings in the City, together with the suggestions of the R.I.B.A., the Surveyors' Institution and the Institute of Builders, were approved. The Court gave authority to let the contract for lamps and standards for London Bridge, the cost not to exceed £2,500.

The Parish Church of St. Thomas, Wednesfield, destroyed by fire eighteen months ago, has been rebuilt from plans by Mr. Fred. T. Beck, architect and diocesan surveyor, of Wolverhampton, by Messrs. H. Willcock, contractors, of Wolverhampton. All is new except the main walls of the nave and the tower at the west end, which have been repaired and pointed. The opportunity has also been taken for the enlargement of the church by the addition of a chancel. The building is constructed of brick with stone dressings, and the roofs are covered with slates. The choir and clergy stalls and pulpit are executed in fumed oak, and the seating throughout the remainder of the church in pitch-pine. The total cost has been about £5,000.

Obituary.

General Brialmont, the celebrated Belgian military engineer, died in Brussels last week.

The late Mr. Edward Woods, the oldest railway engineer in the country, left property of the total value of £128,012.

Mr. John James Barrow, of Hyde Park Gardens, London, died last week. Deceased was a director of the Staveley Coal and Iron Co.

Mr. William Higson, fifty-six, a well-known builder and contractor of Blackburn, son of the late ex-mayor of the borough, died last week. About six weeks ago Mr. Higson fell downstairs and seriously injured himself.

Mr. Thomas Evans, builder and contractor, of Cardiff, died recently at the age of sixty-one years. He went to Cardiff from Pembrokeshire when the town was practically in its infancy. Mr. Evans was interested in the erection of a number of the principal buildings. Of late, however, he had devoted most of his time to sewerage and general contracting work, principally in the Rhondda Valley.

Mr. Benjamin Ebenezer Nightingale, of Albert Works, Albert Embankment, S.E., who died at Richmond on July 17th, was for forty-eight years an active and prominent member of the building and contracting trade. He was a freeman of the City of London, and at some time president of the Master-Builders' Benevolent Institution, being a member of the London Master-Builders' Association and of the Bricklayers' and Tilers' Guild. He erected the council-chamber of the Guildhall and the Leadenhall Market from designs by Sir Horace Jones, and during his career was employed by many other prominent architects, including the late Mr. Bentley, Sir John Taylor and Mr. Aston Webb.

ARCHAEOLOGISTS IN YORKSHIRE.

THE Royal British Archæological Institute held its annual meeting at York on Tuesday and Wednesday last week. On Tuesday York Minster was visited under the guidance of Mr. J. T. Micklethwaite, the surveyor to Westminster Abbey; and afterwards a visit was paid to St. William's College, the beautiful old building at the east end of the Minster. In the evening a paper was read by Mr. T. M. Fallow on "Yorkshire Plate and Goldsmiths." On Wednesday a visit was paid to Howden Church under the guidance of Mr. John Bilson, F.S.A., F.R.I.B.A.

In dealing with the architecture of the church Mr. Bilson said he would like to call attention to a fact bearing on architectural development, a point somewhat neglected. Up to the middle of the thirteenth century the architecture of England ran parallel to the architecture of France, and he observed that there was a good deal of French influence in the tracery of the windows. It was not an improvement, but it led up to the flowing form which began in 1315. In France that was not reached until a considerably later date. That form in the window tracery was a perfectly English development and led on to what was nicknamed Perpendicular, which was also English. Mr. Bilson said there was evidence that the choir was built before the transepts—not the present choir, but one which preceded it. The walls of the choir alone are standing. The choir which was left unfinished in 1272 could not be the existing choir, the style of which pronounced it to be about thirty years later. The magnificent tower was built by Walter of Skirlaw. School buildings were added to the church later in the fifteenth or early in the sixteenth century, which was interesting to note, because they had been continuously used as a school up to the present day. Mr. Bilson also described the Manor House. The splendid hall of this house was built by Bishop Walter, of Skirlaw, who died in 1406. Afterwards a visit was paid to Wressle Castle, four miles distant from Howden. These ruins, most picturesquely situated on the banks of the Derwent, are very interesting from the fact that they are a fine example of the period of transition from military to domestic architecture. The castle was built in the reign of Richard II., and belonged to the great family of Percy.

Selby Abbey was next visited. Mr. J. T. Micklethwaite, F.S.A. described this building, the one great Benedictine monastery of the North of England which survives as a parochial church. He described the manner in which the monks built their places of worship. They first got ready the portion where service was held—the choir; then built the cloisters or living portion; and then went on to complete the church by building the nave. They regarded the church as the Puritans did their religion, always in need of amendment, and he pointed out the changes of fashion which were to be seen. The Rev. A. G. Tweedie said that in some excavations which were carried on he found the foundations of the Norman choir, which was apsidal with apsidal aisles. In the evening Mr. F. Haverfield, F.S.A., of Oxford, read a paper on "Roman Yorkshire."

Views and Reviews.

Saxon Architecture.

The first of these two volumes is an inflated compilation of facts and suppositions about the religious and social life of Saxon and Norman England. Frankly, the greater portion of it does not interest us much: the early chapters are readable enough and the developments from Roman days are described usefully and authoritatively, but the scores of pages dealing with the conversion of England, the missionary bishops and the constitutional history of the village church form very dry reading in an archæological book. The author first considers the sources and spirit of mediæval art, and then goes into the detail of half-timbered work; he afterwards deals with the Roman settlements, pointing out how some of the more prominent of them perished at the time of the Conquest; how the towns which have endured exhibit about as many Roman survivals in topography and monuments as similar cities on the Continent, thus showing that in architecture and the decorative arts classical models were accessible in abundance to the Teutonic settlers, though they may not have cared to employ them; and how the Saxon conquerors settled neither in Roman towns nor along the Roman lines of communication, but in scattered localities where their descendants seem to have remained ever since. Prof. Brown takes a portion of Northamptonshire as an example of characteristic England, wherein are found for study the finest existing specimen of pre-Conquest building—namely, the Saxon church tower of Earls Barton—and Brixworth Church, of the Roman basilica type, dating originally from the seventh century, ruined by the Danes, and restored and added to in the later Saxon period, "so that it forms on the whole the most instructive monument in the early history of our national architecture." Chapter III. of this first volume is devoted to the castle, the church and the monastery—taking as unit the manor-house of the lord, not fortified ("there are no passages in Anglo-Saxon literature which give us any real ground for believing that the lord's house, or even that of the king, was normally a stronghold"), then the moated mound as representing the second form of the manorial residence—the Saxon aula having been succeeded first by the early Norman wooden domicile on its moated mound of earth, and next by the later Norman fortress of stone—and so on to the private chapel, the village church, the town church, the cathedral, the collegiate church and the monastery.

Passing now to the second volume we find, instead of much discursive matter on by-subjects, a masterly descriptive survey of ecclesiastical architecture in England from the conversion of the Saxons to the time of the Norman Conquest; a survey, not a history, because, as the author observes in his preface, the history of a style cannot be written without some general agreement as to the chronology of its monuments, and such a chronology of Saxon buildings has yet to be established; besides which Prof. Brown argues, though we cannot see why, that a history implies development, "and in Saxon architecture, as in Saxon civilization generally, there is neither continuous progress nor evolution . . . but rather alternations of brilliant periods and times of stagnation or decline."

The opening chapter deals with Roman and Celtic sources of English ecclesiastical building. In the remains of Romano-British work are seen the "opus quadratum" or construction with large squared stones, the rubble concrete faced with small stones (with or without bonding courses of brick), the "opus testaceum" where the outer skin is of brick, the plain wall of irregular stonework, and, finally, the light partition of woodwork and plaster. A peculiarity of the large squared stones of Roman workmanship is the tooling, the face being scored with diagonal pick-marks, perhaps originally intended as a key for plaster, though it occurs on stones that seem never to have been plastered. Of solid "opus quadratum" the best existing example is the Newport arch at Lincoln, "the only complete gate of a Roman city that still survives *in situ* and in use."

For Celtic sources we must go to Ireland, which, through Iona, influenced Scotland. Here began the circular dry-built "bee-hive" dwelling or oratory—as on Skellig Michael, off Kerry. Then, in course of time, developments brought the oratory called "Gallerus" on the Dingle promontory of co. Kerry, "one of the most interesting little buildings in Europe." It has preserved its stone walls and roof for perhaps 1,200 years. The walling is laid dry, but the arched window is a development; the vault springs practically from ground level, but the oratory on St. Macdara's Island, off Connemara, has an upright wall on all four sides with gables, the latter having a pilaster-like projection at the edge in conjunction with the steep stone roof. A further development of this characteristic Irish system of encorblement brings us to the churches with double stone roofs. In the later stages was introduced the carved ornament of considerable richness in the style known as Irish Romanesque. "This work, in which a strong Norman influence mingles with the native decorative feeling, dates not earlier than about 1100, by which time the Saxon architecture with which we are at present dealing had passed away."

Professor Brown devotes a chapter to the foreign influences on later Saxon architecture. He affirms that pre-Conquest timber-work was more probably in the compact block-house style (as at Greenstead Church, Essex), and negatives the hypothesis that either Danish or earlier Saxon timber technique supplied models for Saxon stone architecture. But it is in regard to the Saxon bell tower that he makes his most important observations. This is commonly regarded as an imitation of Roman models (Professor Willis observed—"the very mid-wall shafts of the Saxon windows are directly copied from those of the Roman campanili"). Professor Brown asserts, however, that these belfry openings came not direct from Italy at an early period, but through Germany at a late period. "The proof of this is to be found in the fact that in this country the feature occurs in close connection with other features that are not Italian but are German, while it can be shown that there is an equal *a priori* likelihood of a derivation from Germany as from Italy"—which brings us to the general question of German influence on Anglo-Saxon England: this the author deals with at length, bringing to his aid, in particular, the minster at Aachen.

In Chapter III. the number, distribution and criteria of the existing monuments are fully considered, there being nearly two hundred existing churches which exhibit clear remains of Saxon masonry. The herring-bone work and long-and-short work, the Saxon pilaster strips, the window openings, arch-construction, &c., are also fully and clearly diagnosed: then follow chapters on the types of Saxon churches, the tall western tower with its turned baluster shafts, the caps and bases and other features, the book concluding with an index list of Saxon churches.

A particular interesting chapter is that on the history and theory of Saxon building based on the facts ascertained. The churches of St. Martin and St. Pancras at Canterbury; Rochester; Lyminge; Reculver; Brixworth; the crypts at Ripon and Hexham; Escomb; Monkwearmouth, Peterborough and Jarrow are assigned an early date—the seventh century—the reasons being that we do not find in them long-and-short quoins, double windows with mid-wall shafts, double-splayed lights, pilaster strips, strip-work surrounding openings, plinths, nor internally-splayed loops of a tall narrow form—the absence of these features, combined with positive indications of early date, suffice to attribute the work to the pre-Danish epoch. It might appear that a building of rude and primitive workmanship belonged to an early date, but there is no such normal social development to warrant the assumption, and, as a fact, some of the golden times of Saxon England, when the best and most ambitious work might be looked for, came at an early epoch. "Though there are monumental links between the Early Saxon building period and that of Romano-British times, the strictly architectural connection is slight. There is no evidence that any existing Saxon church was once part of a pagan Roman building. . . . Whether or not any part of a Romano-British church survive in an existing Saxon one is another question . . . . The plans of the earliest Saxon churches were partly apsidal and partly square-ended, the latter probably preponderating . . . and in technical aspects exhibit a mingling of the two traditions operative in our pre-Conquest building . . . With materials and technique that are for the most part Roman, but exhibit some Celtic peculiarities, the Saxon builder of the seventh and eighth centuries constructed the monastic and village churches. . . . So soon however as the disastrous and terrifying Danish inroads had become the predominant feature of the times the art of building must have received a check . . . Notwithstanding this, during the second or Danish period it was certainly not at a standstill, for the development of the special Saxon peculiarity of the long-and-short quoin must fall within this time . . . During the beginning of the intermediate or Danish period there was established that connection between England and Germany already noticed. . . . The third period opening with the reign of Edgar (959–975 A.D.) claims by far the greatest number of the extant monuments, and this fact gives it a proportionate importance. The same nave and chancel plan which we find at the earliest epoch remains in common use to the end of the whole Saxon period, and is then taken over as an inheritance by the Norman and mediæval builders. This normal scheme is, however, very commonly extended by the addition of a western tower, which is established in this period as a substantial feature of English church architecture; while axial towers in various positions, towers forming the body of a church, twin-towered façades, and central towers connected with the cruciform plan, or at times combined with western towers, supply interesting material to the student of architectural evolution. . . ."

This second volume is a mine of facts about Saxon architecture, illustrated by many drawings and plans, the whole brought together, discussed and compared in a manner which at once shows the author's wide experience and discriminating knowledge.

"The Arts of Early England" by G. Baldwin Brown, M.A., Watson Gordon Professor of Fine Art in the University of Edinburgh; mostly illustrated with drawings by his wife. London: Mr. John Murray, Albemarle Street, W. Two volumes, price 16s. nett each.

The Housing Problem.

In Mr. Thompson's latest work we have an excellent text-book on all matters affecting the housing of our industrial population. The author's long experience in connection with the Richmond housing schemes and other similar movements enables him to indicate the best means of overcoming those difficulties which ordinarily surround an attempt to secure a sufficiency of decent houses for the working man and his family. Many districts in our large towns contain numerous dilapidated, insanitary or overcrowded houses, which in their present condition not only prejudicially affect the moral and physical welfare of the occupants, but also constitute a grave danger to the public health. So far as single insanitary houses or very small slums are concerned, the local authorities are able to effect some improvement by compelling the several owners to repair, close or demolish such buildings, but in the case of large unhealthy areas containing old and narrow streets or alleys more drastic measures are necessarily required. The compulsory purchase and removal of large slum districts by the local authorities is frequently the only practical solution under such conditions. Similarly, the building of workmen's dwellings is oftentimes forced upon the local authorities in order to alleviate in some degree the serious house famine which has arisen.

Amongst the many instances of overcrowding to be found both in town and country, the author states that in Glasgow it was ascertained that "no less than one-fifth of the people live in one-room dwellings, and more than half the people have houses with not more than two rooms"; whilst another enquiry showed that "in 240 villages with 10,000 dwellings there were 5,000 bad cottages, and that in 30 villages gross overcrowding was prevalent." To remedy such a state of affairs is by no means an easy matter, but Mr. Thompson clearly and fully describes the various schemes which have been tried from time to time. We have details of the efforts made by co-operative societies, building societies and estate companies, together with particulars of the beneficial results obtained by such model employers of labour as Messrs. Lever and Cadbury in their well-planned villages of Port Sunlight and Bournville. Another section of the book deals with the actual cost of the demolition of insanitary areas in different parts of the country, detailed plans and estimates of the cost of artizans' dwellings, cottages and model lodging-houses as erected by municipal authorities in London, Manchester, Richmond, Nottingham, Glasgow, Liverpool, &c., being also given.

Whilst the urgent requirements of the population in our large towns receive full consideration in these pages, we are pleased to find that the pressing needs of the rural districts have not been overlooked. The descriptions of the experimental cottages which have been erected at Ixworth (Suffolk) and Penshurst (Kent) by the respective d trict councils are interesting and instructi but it is in Ireland that we find the m comprehensive measures of municipal housi being carried out.

Not the least valuable part of the bo consists of a well-arranged appendix co taining an annotated summary of the vari Working Classes Acts, regulations and laws, together with other useful memoran

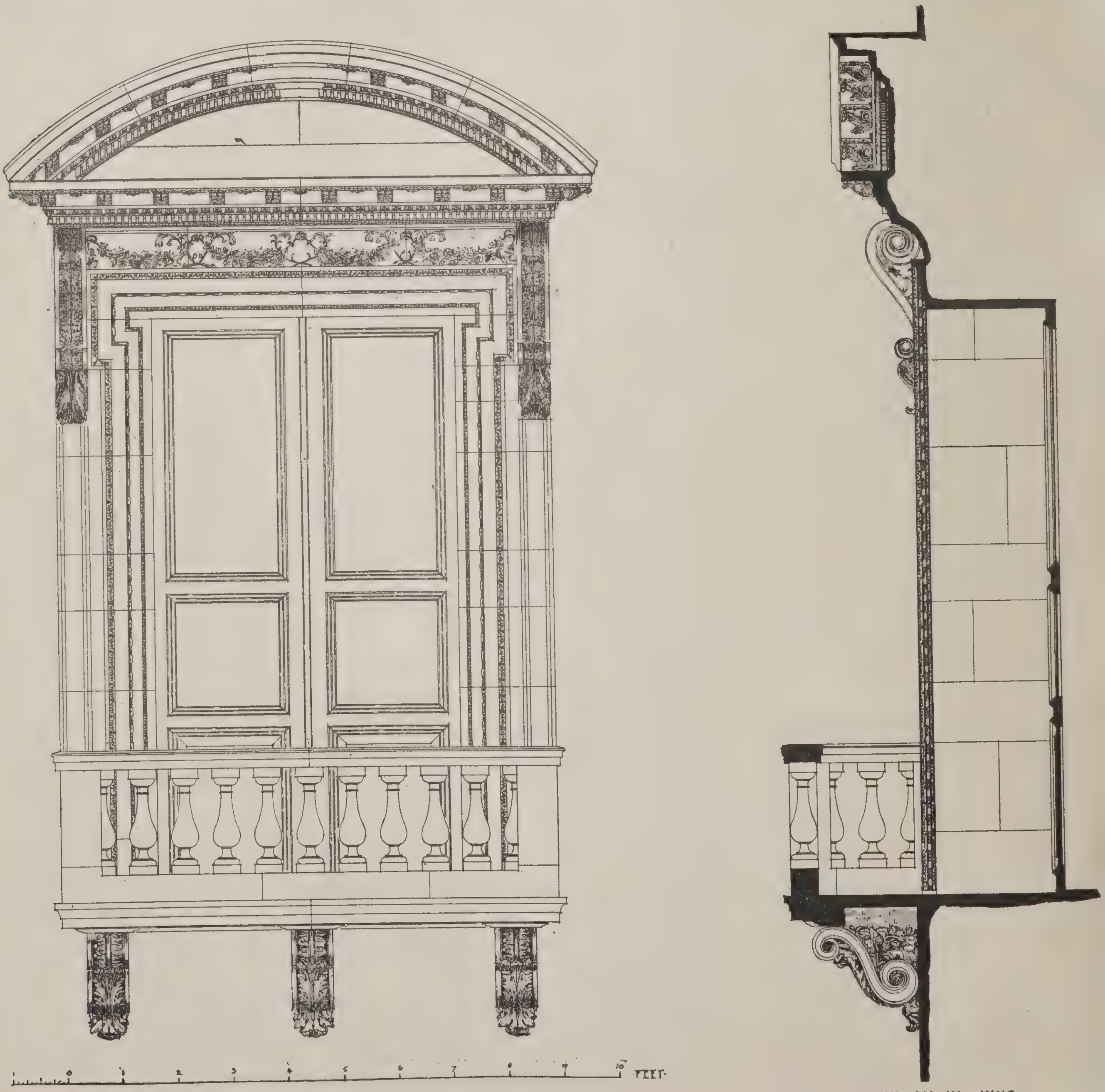
Mr. Thompson has spared no pains provide a thoroughly trustworthy work reference, and one which will be of utmost value to architects, municipal gineers, builders and others who are direc concerned with the design or construction artizans' houses, whether for public or priv purposes. The book contains twenty- full-page illustrations, together with plans and diagrams of typical working-c dwellings.

T. E. C

"The Housing Handbook." by W. Thompson. Lon The National Housing Reform Council, 432, West Str W.C., price 6s. nett.

Old St. Peter's.

The portions of this book which will terest the architect especially are those scriptive of Old St. Peter's, Rome. The b of the apostle, together with that of St. P was laid in a tomb at S. Sebastino, c



BALCONY, ASHMOLEAN MUSEUM, OXFORD. MEASURED BY G. GARDNER AND W. KING. DRAWN BY W. KING.

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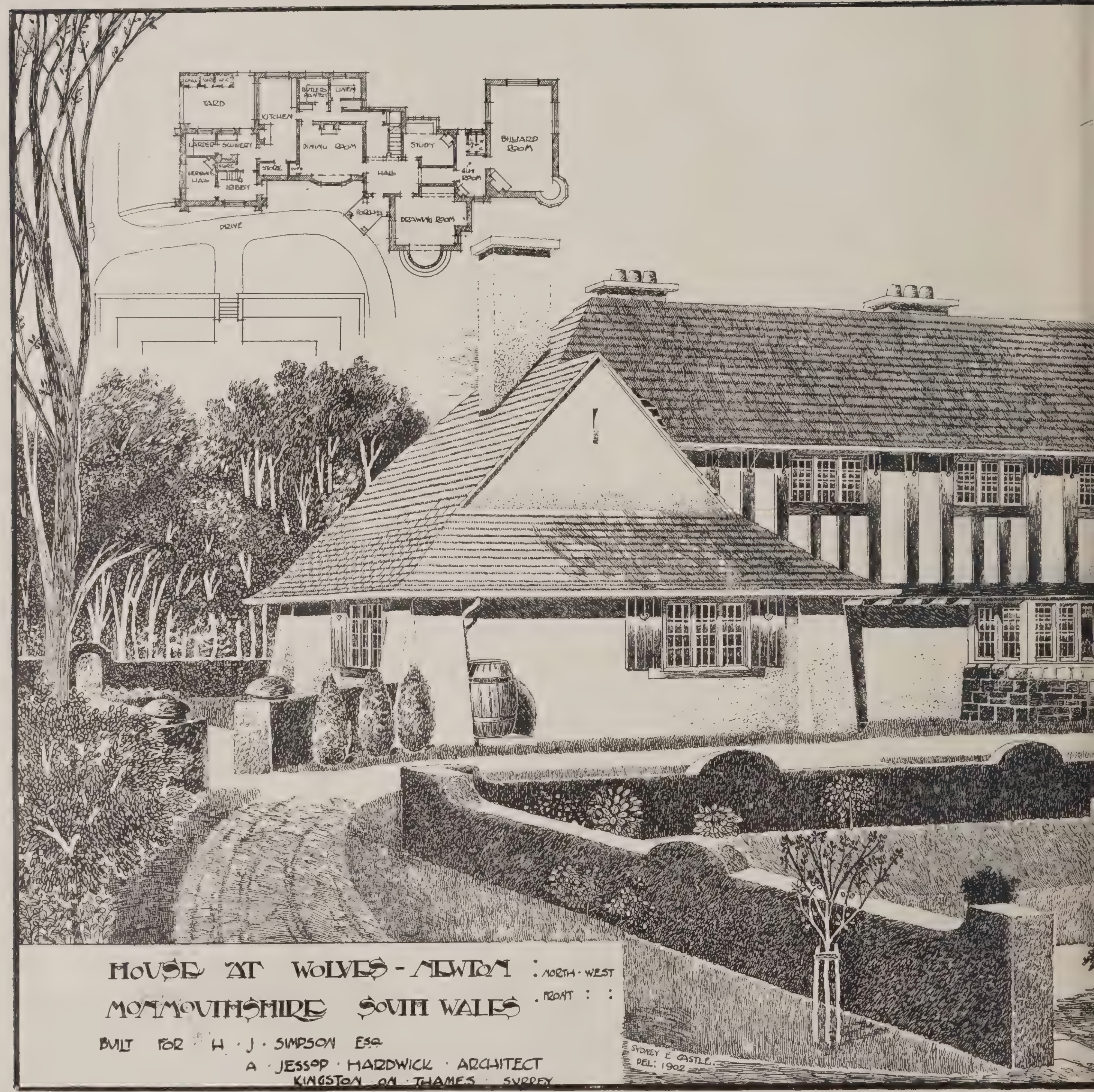
Wednesday, July 29th, 1903.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CUPD
DINING ROOM
HALL
STUDY
W.C.
GUN ROOM
BILLIARD ROOM
PORCH
DRAWING ROOM
DRIVE
HOUSE AT WOLVES-NEWTON : NORTH · WEST
MONMOUTHSHIRE SOUTH WALES . FRONT : :
BUILT FOR H · J · SIMPSON ESQ
A · JESSOP · HARDWICK · ARCHITECT
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SYDNEY E CASTLE. DEL: 1902

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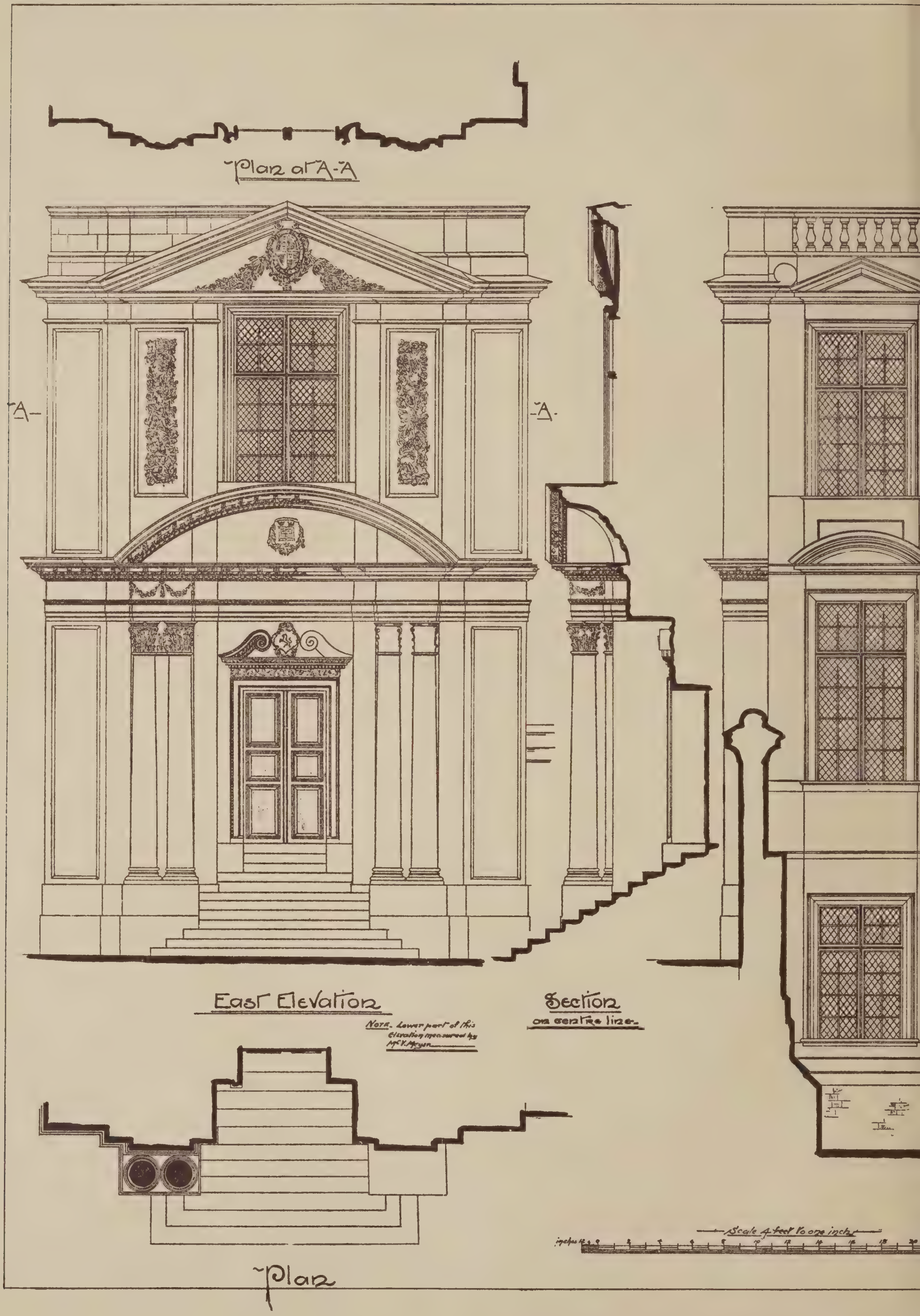
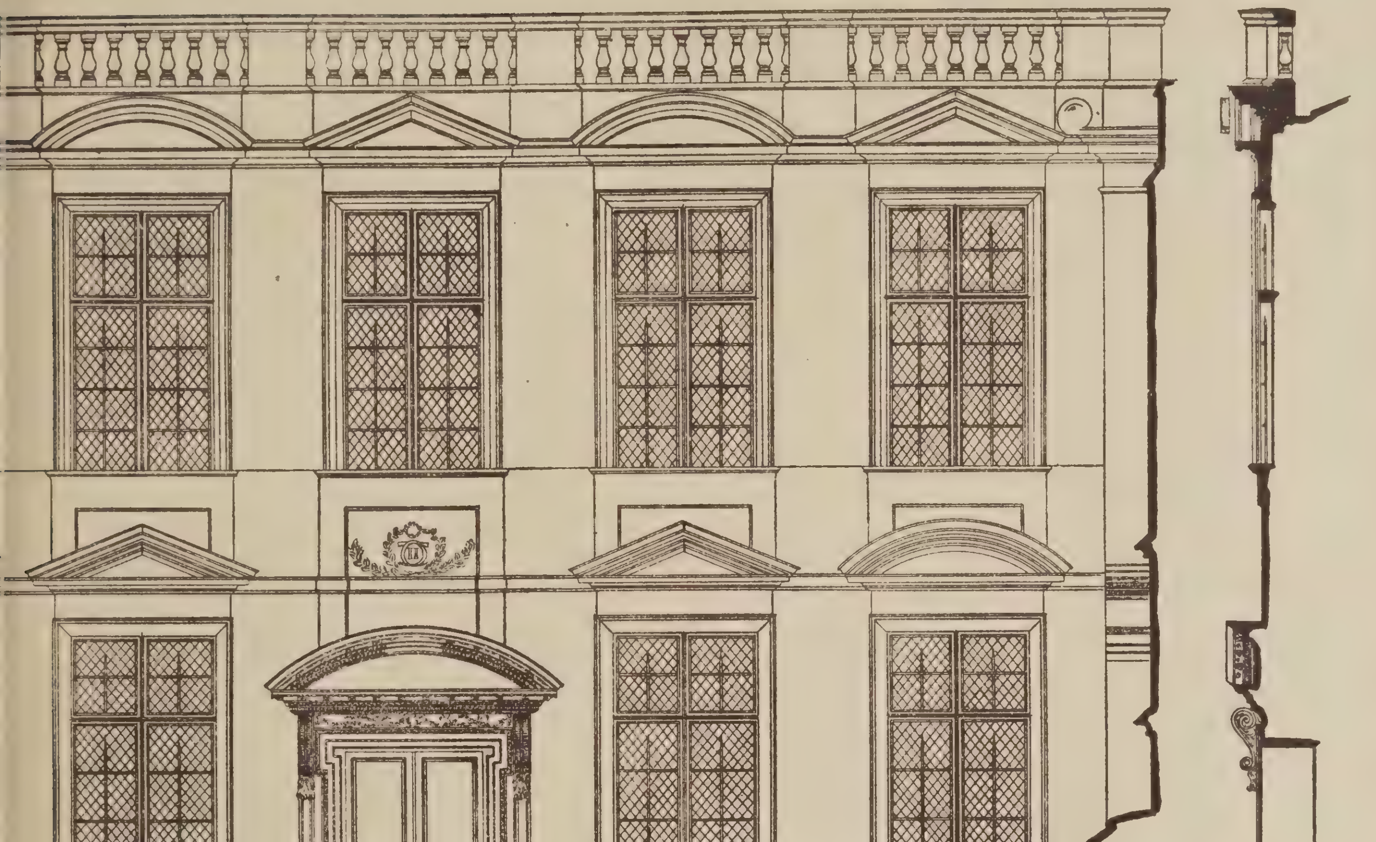


Plan at A-A
A
A
East Elevation
Note. Lower part of this elevation measured by Mr V. Meyer
Section
on centre line
Scale 4 feet to one inch
inches 12 0 2 4 6 8 10 12 14 16 18 20
Plan

THE ASHMOLEAN MUSEUM, OXFORD. MEASURED BY W. KING A



North Elevation
(facing Broad Street)

Section
on centre line.

"PHOTO-LITHO." R. J. EVERETT & SONS, 56 LUDGATE HILL, E.C.

GILBERT T. GARDNER. DRAWN BY GILBERT T. GARDNER,

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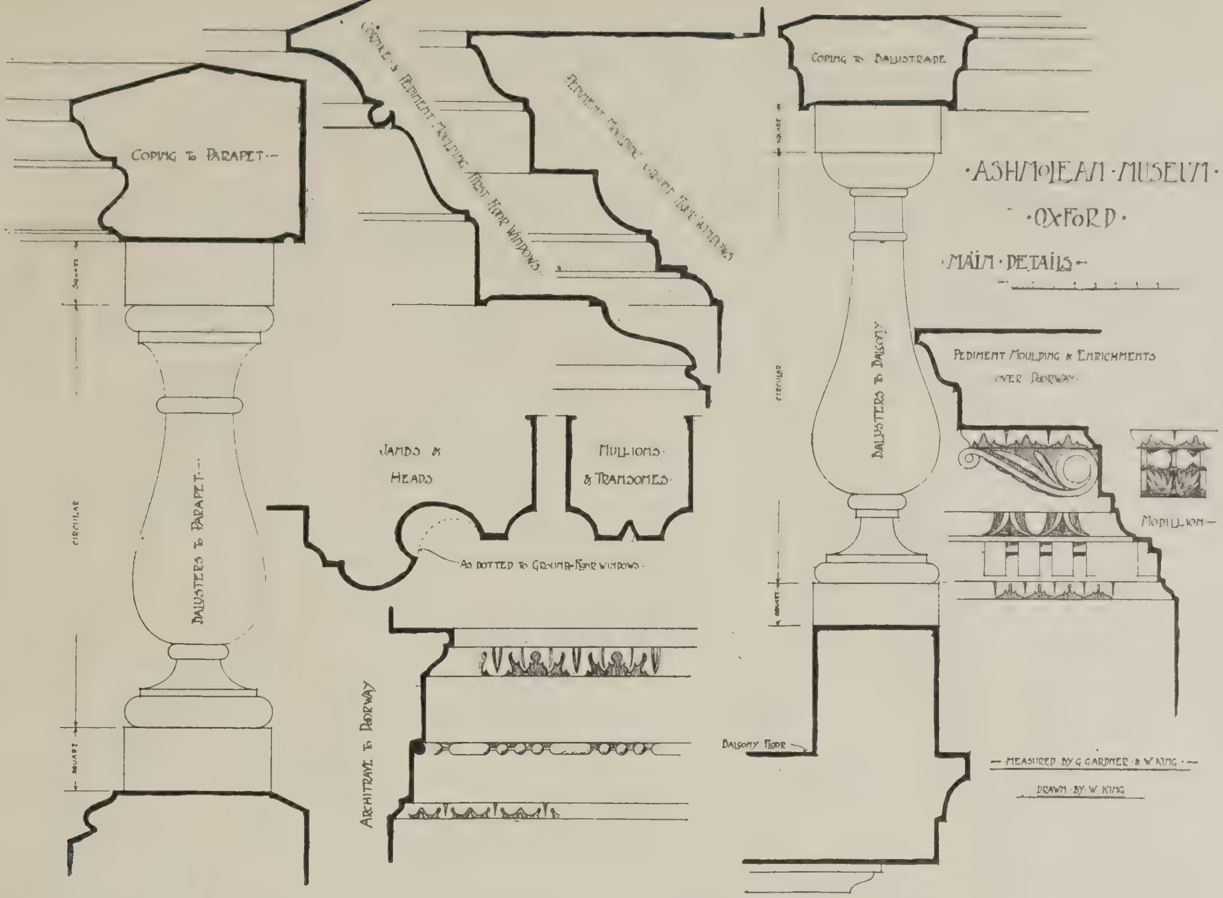

which was afterwards built a *memoria* or upper chamber to serve as a small church. The tomb was situated near the wall of the Circus of Nero, and when Constantine determined to build a basilica over the spot he pulled down the circus and used the materials in the new building: a plan showing this is given in the book. The tomb formed an apsidal termination to the basilica, and over it was built an altar, in doing which, however, Constantine found it necessary to fill in the lower chamber with masonry: under the altar at the present time there is a solid belt of masonry 7ft. thick pierced by an arched recess forming the celebrated *Confessio*. Of the vicissitudes of a thousand years through which the church passed we have no space to deal, nor to give any detailed description of Old St. Peter's, almost all the exact knowledge of which comes to us from the plan by Alfarano published in 1589: for such particulars we must refer the reader to this volume, where he will find them illustrated by many ancient drawings and plans, besides a perspective of Old St. Peter's restored from ancient authorities by Mr. H. W. Brewer.

"St. Peter in Rome and his tomb on the Vatican Hill," by Arthur Stapylton Barnes, M.A., University College, Oxford, priest of the diocese of Westminster. Second edition, with a prefatory letter from Professor Lanciani. London: Swan Sonnenschein & Co., Ltd., Paternoster Square, E.C., price 10s. 6d.

A Tourist's Guide to St. Albans.

For the tourist who has a few days to pend in St. Albans this guide amply suits ts purpose. The book, however, is of a sort hat does little credit to its subject. Only he most abbreviated form of description can e given and many interesting facts and eatures have to be omitted. This defect will e appreciated when it is stated that the istory of the town is condensed into seven mall pages, while the places and buildings f interest, both ancient and modern, exclusive of the abbey and churches, are lisposed of in ten pages. The book is ertainly cheap for 4d., but that is its only recommendation. Of the illustrations, only one—of the clock tower—possesses any real merit.

"The Archer Guide to St. Albans," by B. C. Dexter. London: The Archer Printing Co., 57, Shoe Lane, E.C., price 4d.

Bricks and Mortar.

Aphorism for the Week.

> *A piece of work. . . . I wondered,*
> *Could be so rarely and exactly wrought,*
> *Since the true life on't was.*
> Shakespeare.

Our Plates. The house at Wolves Newton, Monmouthshire, of which Mr. A. Jessop Hardwick is the architect, stands on a beautiful site five miles from Chepstow, overlooking a view of forty miles towards Abergavenny. The surroundings are very charming. The whole of the walls are in local stone and are covered with white roughcast. The roofs are covered with Bridgwater tiles. The whole of the woodwork is oak left its natural colour. The hall has a solid oak staircase, and the walls have plain oak panelling up to a stone frieze pinned up by specially-designed bronze bosses. There is in the hall a massive carved fireplace in grey Forest stone. The billiard-, drawing- and dining-rooms are carefully designed in oak and stone, and the first has an open-timber roof with a lantern light and a large bay for sitters. The contractors for this and other works in connection with the house are Messrs. E. Turner & Sons, of Cardiff. The electric light was installed by Messrs. Alger & Sons, of Newport. Messrs. Liberty & Co. will execute the furnishing. The gardens will be laid out extensively, and a drive is being constructed around the whole of the house to the stables. The work is now nearly completed.—The late Ashmolean Museum, Oxford, was measured by Mr. W. King and Mr. Gilbert T. Gardner last summer by the aid of scaffolding erected for the purpose of restoring the balustrading, &c., at the top. The lower portion of the east front is taken from the drawing by Mr. Val Meyer in The Builders' Journal for October 2nd, 1901, when a short account was also given. The contents of this building were removed some time ago to the Taylorian Buildings, and it is now used as part of the Bodleian Library. The stonework of the cornices, architraves to first-floor windows, and the upper facework generally are in a very decayed state.

Birmingham's Municipal Art Schools. Mr. Arthur J. Gaskin has been appointed headmaster of the Vittoria Street School for Jewellers and Silversmiths, in succession to Mr. R. Catterson-Smith, recently appointed headmaster of the Birmingham Central and Branch School. The appointment was made after consultation with the representatives of the Birmingham Jewellers' and Silversmiths' Association, who cordially support the school. Mr. Gaskin was educated at the Wolverhampton Grammar School, and joined the Central School, Birmingham, in 1883, where he soon became a distinguished student, especially in drawing from the life. Since 1884 he has on two days a week been a master in the advanced classes at the Central School. Mr. Walter Crane, Mr. Gaskin and Mr. Charles M. Gere are the only other artists than Sir Edward Burne-Jones whom Morris invited to design for the Kelmscott Press. In 1893 William Morris said: "These young men of the Birmingham School of Art, Mr. Gaskin, Mr. Gere and Mr. New, have given a new start to the art of book decorating." Mr. Gaskin is a member of the Arts and Crafts Exhibition Society.

Hampstead Town Hall. The Hampstead Borough Council propose to enlarge the Town Hall, Haverstock Hill, and plans have been prepared for that purpose by Mr. John Murray, of 7, John Street, Adelphi; the total estimated cost being £9,672. The additional annual cost would represent approximately a rate of 3s. 6d. in the £, and the total annual cost (including the charge for the existing buildings) would be 3s. 8d. in the £ for the first year, and in the tenth year about 1s. 5d. in the £. Apart from the alterations and additions, considerable strengthening of the present building will have to be undertaken, owing to defective foundations, and Mr. Murray estimates that the approximate cost of this work, including new drainage and architect's and quantity surveyor's charges, will be £5,000. It is stated that in order to accommodate the present staff it has been found necessary to utilize the council-chamber and committee-rooms when these rooms are not in the occupation of the members of the Council.

Excavations in Egypt. THE last season's work of British archæologists in Egypt has been most fruitful, both in the singular beauty of many of the objects discovered and the further elucidation of a period far anterior to what a comparatively few years ago would have been regarded as the beginnings of history. The year will have been further remarkable from the convergence of the testimony of independent workers in different fields, as the investigations of Prof. Flinders Petrie in Egypt and those of Mr. Arthur Evans in Crete have been found to be mutually corroborative and to lead to new conceptions alike of Egyptian and of early Hellenic civilization. This year, as usual, the exhibition has been held in University College of the work carried on by Professor Petrie and Messrs. Grenfell & Hunt, on behalf of the Egypt Exploration Fund, its Græco-Roman branch and the Egyptian Research account. The principal work of the fund has been effected on the old Temple site of Abydos, and its unprecedented feature is that on the same site remains have been discovered of successive periods covering about 4,500 years, and beginning about 5000 B.C. The earliest temple is believed to antedate the first dynasty and the latest to be of the XXVIth. The excavation work was of almost surgical nicety in the discrimination and of scientific precision in the measurements of the remains of all these generations of mankind. The great advances made in the earliest times, in both art and manufacture, are truly astonishing. The use of glazed work on a large scale, hitherto supposed to be of late development, is shown to have been extensive even in the first dynasty. Of this age have been found bowls of diorite and quartz crystal, glazed beads and tilework, and in particular a piece of a large green glazed vase of Aha-Mena, with a name inlaid in purple, showing that polychrome glazing was already in use during the first dynasty. The ivories, too, show a surprising mastery of fine and natural work, such as, in Professor Petrie's words, "certainly cannot be rivalled by any later work in Egypt, or by very little that has been done elsewhere." The black pottery is, we are told, of non-Egyptian origin. The forms are Greek, with a long curved neck to the amphora and hollow feet to the vases. A similar quality is found in Crete of the late neolithic age. The pottery is ascribed to the first dynasty at Abydos. In the Græco-Roman branch, Mr. Grenfell and Mr. Hunt completed their excavations at Hibeh, begun in the previous year, and thence made large additions to their collection of early Ptolemaic papyri.

The Clifford's Inn Carving.—Messrs. Farebrother, Ellis & Co. last week sold the seventeenth-century woodwork and carving, ascribed to Grinling Gibbons, at No. 3, Clifford's Inn, in one lot, for 550 guineas, to Messrs. Durlacher, who were understood to be acting for the Victoria and Albert Museum, Kensington. The dimensions are, 21ft. long, 15ft. wide and 10ft. high. The lot included the great chimney-piece.

R.I.B.A. MIDSUMMER EXAMINATIONS.

Pass List.

THE Preliminary Examination, qualifying for registration as *Probationer R.I.B.A.*, was held in London and various provincial centres on June 9th and 10th: 198 candidates were admitted and 35 claims for exemption from sitting for the examination were allowed: the remaining 163 candidates were examined with the following results:—

District.	Total examined.	Passed.	Relegated.
London	82	56	26
Birmingham	9	7	2
Bristol	13	7	6
Cardiff	4	4	0
Glasgow	3	3	0
Leeds	14	11	3
Liverpool	10	8	2
Manchester	21	16	5
Newcastle	7	5	2
	163	117	46

The passed candidates, with those exempted—numbering altogether 152—have been registered as Probationers. They are:—

J. C. Ainsworth (Hyde)
V. Aldridge (Chigwell, Essex)
J. G. Allen (London, N.W.)
A. S. Ash (Leeds)
S. Ash (Gateshead)
A. R. Ashby (Basingstoke)
G. B. Badlay (Leeds)
C. R. Bawden (Carshalton)
G. W. H. Bean (Hull)
A. Beck (Newcastle-on-Tyne)
A. E. Beswick (Swindon)
J. G. Birch (Chester)
R. H. Blackburn (Bradford)
A. A. Blair (Douglas)
G. P. Bowie (London, S.W.)
H. E. Brace (London, S.E.)
H. H. Bradfield (London, S.W.)
G. S. H. Bradford (Bray, co. Wicklow)
T. M. Bricknell (London, W).
H. Bromley (Folkestone)
A. W. G. Brown (Edinburgh)
A. H. Brownrigg (London S.E.)
H. A. Buck (London, W.)
C. Burrage (Eastbourne)
P. Caminesky (Manchester)
E. J. Cartaar (Kew Green)
R. J. Casement (London, N.W.)
H. W. Chapman (London, W.)
H. L. Charles (Hereford)
R. R. Christien (Farnworth, near Bolton)
C. W. Clark (Plymouth)
J. P. Clark (Tipton)
F. J. Coghlan (Cheltenham)
B. H. Collcutt (Oxford)
R. S. Cooper (St. Leonard's-on-Sea)
G. A. Cope (Derby)
C. W. Cope-Proctor (Bristol)
J. W. Corney (Settle)
A. N. Cotterell (Bristol)
R. C. Coulson (London, S.E.)
C. Coxall (London, S.W.)
A. Crampton (Southport)
W. H. Crauford (London, N.)
A. Cunningham (London, S.W.)
W. W. Cunningham (Glasgow)
C. E. Curphey (Douglas)
W. A. Dalt (Nottingham)
H. A. Dalrymple (Edinburgh)
P. Dalton (Birkdale, near Southport)
E. G. Dawson (Barking)
R. A. Dixon (Birmingham)
L. J. Dolman (Repton, near Burton)
J. Dovaston (London, W.)
G. E. Dunnage (London, S.W.)
H. B. Elkington (Bournemouth)
H. A. Fairhead (Enfield)
W. A. M. Fiddaman (London, S.E.)
E. W. Filkins (St. Mary Cray)
C. H. Fry (Ipswich)
H. B. Gilbert (Reading)
S. L. C. Gilks (London, S.W.)
F. H. V. Gorely (Sittingbourne)
W. S. Gorringe (Seaford)
L. W. Green (London, E.C.)
W. Guthrie (London, S.W.)
E. G. Hallam (Southport)
W. G. Halliday (Stockport)
G. J. Hands (Birmingham)
D. L. Harley (Blantyre)
W. H. Harral (Leicester)
D. Harvey (Hull)
R. E. Haymes (Leamington)
J. B. Healing (London, S.E.)
A. G. Henderson (Glasgow)
N. Heppenstall (Milnsbridge)
A. L. Higgins (Bradford)
H. U. M. Higgins (London, N.)
A. D. Holder (Hull)
P. Holgate (Darwen)
F. E. Ingham (Rhyl)
L. L. G. Jeeves (London, N.)
A. H. H. Jenkins (Blackmill, near Bridgend)
L. F. Jones (Mitcham)
N. Jones (Southport)
A. Kay (Pendleton)
O. H. Kennedy (London, S.W.)
W. Kerr (London, S.W.)
F. C. King (Cultra, co. Down)
P. E. C. Lain (London, N.W.)
M. Leybourne (South Shields)
J. Lindley (Manchester)
J. Littlewood (Manchester)
S. G. Livock (Norwich)
F. L. Lloyd (Swindon)
R. E. McDonnell (New Ferry, Cheshire)
J. McNicol (Stockton-on Tees)
C. C. Makins (Harrow)
C. B. Maltby (Leicester)
L. Mansfield (Tunbridge Wells)
K. W. Matheson (London, N.E.)
M. D. Mattinson (Manchester)
T. S. Nash (Plumstead)
E. J. Norman (Tonbridge)
G. Nott (Leicester)
H. E. Owen (Anglesey)
C. L. Pace (Didsbury)
A. S. Padfield (Cardiff)
J. Park (Leeds)
B. L. Parry (Poulton-le-Fylde, Lancs)
A. F. Pelling (Durham)
J. T. Penfold (London, W.)
A. W. Phillips (Swansea)
A. F. E. Poley (Hampton Hill)
J. Pollard, jr. (Blackburn)
J. A. Quittenton (Warlingham)
H. B. Richards (Glasgow)
W. H. Riley (Leicester)
H. Rippon (London, N.)
T. L. Roberts (Wimbledon)
B. H. T. Rodd (Feltham)
L. H. Ross (Aberdeen)
A. F. Royds (Brentwood)
A. Rusbridge (Reading)
J. R. Shephard (Hull)
E. Shorten-Stearn (Ipswich)
A. Sickelmore (London, W.)
C. H. Smith (Nottingham)
H. S. Spain (London, W.C.)
M. E. Stahl (Weston-super-Mare)
T. Temple (Edinburgh)
C. S. Thomas (Neath)
A. G. W. Tickle (London, W.)
E. F. Tomlins (London N.W.)
F. Travis (Lytham)
J. S. Turner (London S.E.)
G. S. Twizell (Newcastle-on-Tyne)
H. Vause (Whitby)
S. S. Waghorn (London, N.)
L. W. Walton (Nottingham)
A. S. West (Harrogate)
A. Wheatley (Barnsley)
V. S. Whitaker (Burnley)
J. P. White (Bedford)
W. Whitehead (Leeds)
E. S. Whitney (London, S.W.)
D. Whittaker (St. Helens)
C. W. Wood (London, W.C.)
E. L. Wright (Nottingham)
H. L. Wrigley (Wollescote Lye, near Stourbridge)
R. S. B. Wyld (London, N.)
W. B. Wyllie (London, W.C.)
S. A. S. Yeo (Exeter)
J. G. Young (Alloa)

Intermediate.

The Intermediate Examination, qualifying for registration as *Student R.I.B.A.*, was held in London and the undermentioned provincial centres on June 9th, 10th, 11th and 12th: 119 candidates were examined, with the following results:—

District.	Number examined.	Passed.	Relegated.
London	87	34	53
Bristol	5	3	2
Glasgow	4	3	1
Leeds	10	5	
Manchester	13	5	8
	119	50	69

The passed candidates, who have been registered as Students, are as follows, the names being given in order of merit as placed by the Board of Examiners:—

J. T. Halliday (Oldham)
J. Reid (Glasgow)
J. H. Markham (London, N.W.)
W. H. Bagot (London, S.W.)
W. P. Rylatt (Hull)
B. Brown (Bradford)
L. Wilkinson (London, W.)
V. G. Santo (Bromsgrove)
H. F. Saxelbye (Hull)
G. H. Williams (London, W.C.)
G. E. Phillips (Cambridge)
W. K. McDermott (Borough Green, Kent)
C. R. Pinsent (London, N.W.)
N. O. Searle (London, S.W.)
L. S. Crosbie (London, S.W.)
A. Hill (Huddersfield)
J. C. Procter (Benrhydding, Yorks)
S. Searle (Harrow)
J. W. Farmer (South Woodford, Essex)
L. S. Sullivan (London, W.C.)
D. B. Jenkinson (Rotherham)
R. E. Hastewell (Haltwhistle)
S. Moss (Eccles)
S. W. Hill (London, N.)
H. S. Morran (London, S.E.)
H. H. Whittington (Buckhurst Hill, Essex)
D. Milne (Dundee)
E. J. Dod (Southport)
W. C. Lemaitre (London, S.W.)
D. M. O'Connor (London, W.
W. P. Marr (Kingsbridge)
J. Smith (Glasgow)
H. C. Hollis (London, N.)
S. Burgoine (London, S.E.)
C. E. Clouting (Cambridge)
A. F. H. Daniel (Henbury, Glos)
H. H. Earnshaw (Manchester)
C. W. Eaton (Leicester)
W. H. Evans (Southampton)
J. L. Henderson (Edinburgh)
W. H. Hillyer (Shortlands, Kent)
P. H. Keys (London, N.)
L. A. Phillips (Newport, Mon.)
H. P. Roberts (London, S.W.)
H. S. Scott (Birmingham)
W. J. Stenner (Bristol)
C. Stonehouse (Blackburn)
E. G. Walker (London, S.E.)
R. F. Wheatly (Bromley)
A. W. Wilson (Peterborough)

Final.

The Final and Special Examinations, qualifying for candidature as *Associate R.I.B.A.*, were held in London from June 26th to July 3rd. Of the 55 candidates* examined, 22 passed and the remaining 33 were relegated to their studies. The successful candidates are as follows:—

E. P. Archer (London, N.)
O. M. Ayrton* (London, W.C.)
H. A. Battley (London, S.E.)
T. J. Bee (Sidcup)
H. T. Bill (Birmingham)
H. Black (London, W.)
W. A. T. Carter (London, W.)
G. Church (Warlingham)
J. D. Clarke* (London, W.)
W. E. Couch (London, W.)
P. B. Dannatt (London, S.E.)
H. E. Davey (London, S.E.)
R. K. Gall (Aberdeen)
J. Green (Birmingham)
T. F. Green (London, N.W.)
E. M. Joseph (London, E.C.)
A. E. Lacey (Ashford, Kent)
T. E. Richards (Barry)
T. Simpson* (London, E.C.)
H. B. Smith (London, W.C.)
S. Warwick (London, W.)
R. Wylie (Gateshead)

The following table shows the number of failures in each subject of the Final Examination:—

I. Design	22
II. Mouldings and Ornament	25
III. Building Materials	13
IV. Principles of Hygiene	14
V. Specifications	11
VI. Construction: Foundations &c.	12
VII. Construction: Iron and Steel, &c.	13

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* Six of these candidates entered for the Special Examination, which is for architects in practice not less than twenty-five years of age, and chief assistants over thirty. Such candidates are exempted by special resolution of the Council from the Preliminary and Intermediate Examinations, and from submitting "Testimonies of Study." Three of these special candidates passed; an asterisk is prefixed to their names in the above list.

Tenders.

Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager, BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

Aber Bargoed (Wales).—For the erection of 250 dwelling-houses at Aber Bargoed, for the Powell Duffryn Steam Coal Co., Ltd. Mr. G. Kenshole, architect, Hanbury Road, Bargoed:—

J. Newcombe, Ebbw Vale	£52,320 0
Jones Brothers, Treharris	47,257 10
Williams & James, Pontypridd	46,950 0
J. Howells, Caerphilly	46,210 0
G. Edwards & Son, Canton, Cardiff	42,590 0
A. S. Morgan & Co., Newport	42,460 0
C. Sora, Cardiff	40,903 10
Thomas & Hughes, Llanbradach	40,360 0
W. Williams & Sons,* New Tredegar	39 550 0

* Accepted.

Abertillery (Mon).—For the erection of three additional classrooms at Abertillery to accommodate 170 children, along with cloakroom, storeroom, &c., for the Aberystruth School Board. Mr. R. A. Roberts, architect, Abercarn, Mon. Quantities by architect:—

D. Lewis, Aberbeeg	£1,780 0
R. Tudor, Abertillery	1,745 0
N. Bagley, Abertillery	1,724 0
Gaen Brothers,* Abertillery	1,632 2

* Accepted.

Barking.—For the making-up and surface-water drainage of Victoria Road and Loxford Road in their district, for the Barking Town Urban District Council. Mr. C. F. Dawson, surveyor:—

Parsons & Parsons, Ilford	£1,917 18 7
D. T. Jackson, Barking	1,896 0 8
G. T. Anderson Poplar	1,836 18 0
B. W. Glenny,* Romford	1,814 15 6

* Accepted.

Biggleswade.—For the erection of new vagrant wards at the workhouse, for the guardians:—

J. Head Potten	£1,657
Bartle & Son, Potton	1,637
W. Howard, Huntingdon	1,620
W. Wade, St. Neots	1,606
Mallett & Wood, Luton	1,590
W. Haynes, Sandy	1,562
Stone & Skelton, Biggleswade	1,553
C. Wright, Langford	1,400
S. Redhouse,* Stotfold	1,340

* Accepted.

Bristol.—For the erection of a new hotel at Knowle, Bristol, for Messrs. J. & J. Usher, Ltd., New City Brewery, Bristol. Mr. T. Scammell, architect and surveyor, 1, St. Stephen Street, Bristol:—

W. Church	£2,993	Perkins & Son	£2,550
Eastabrook & Sons	2,934	C. A. Hayes	2,550
Denby & Co.	2,799	F. Chown	2,500
E. Clark	2,795	T. R. Lewis	2,500
E. Love	2,585	Wilkins & Gosling*	2;475

* Accepted. [All of Bristol.]

Cambridge.—For rebuilding 28, 29 and 30, Burleigh Street, for Messrs. E. Bland & Co. Mr. Paul Bausor, architect, 9, St. Andrew's Street, Cambridge. Quantities by the architect:—

Oak Building Co., Ltd., Cambridge	£1,570
Kerridge & Shaw, Cambridge	1,560
T. H. Prince & Sons,* Cambridge	1,401

* Accepted.

Cardiff.—For the construction of an underground public convenience in North Road, for the Corporation. Mr. W. Harper, M.I.C.E., borough engineer:—

F. Bond	£3,490 0 0
Knox & Wells	3,344 18 1
D. W. Davies	3,340 0 0
W. Symonds & Co.	3,276 4 5
E. Turner & Sons	3,247 16 1
J. Allan & Son*	3,089 0 8

* Accepted. [All of Cardiff.]

Cheadle (near Stoke-on-Trent).—For the erection of an isolation hospital, containing two pavilions, one for twelve beds and one for four beds, administrative block, and laundry, &c., for the Cheadle Rural District Council. Mr. F. T. Inskip, surveyor:—

J. Bagnall, Stoke-on-Trent	£2,286
J. Pattison Stoke-on-Trent	2,270
W. Alcock, Cheadle, Staffs	2,167
Bridgett & Hand,* Dilhorne, Stoke-on-Trent	1,981

* Accepted. [Surveyor's estimate, £2,000.]

Hertford.—For laying about 40yds. 12in., 750yds. 9in. and 150yds. 6in. glazed stoneware pipe sewers, with manholes and other work in connection therewith, also for making-up the following private streets—viz., Duncombe Road (part of) and Church Road (part of)—for the Corporation. Mr. John H. Jevons, A.M.I.C.E., borough engineer:—

Wallace & Inns, Hitchin	£2,345
A. C. Soan, Streatham	2,171
W. H. Hinkins, Royston	2,117
Ekins & Co., Hertford	1,675
J. Jackson, Forest Gate	1,663
A. T. Catley, London	1,643
E. Iles, Wimbledon	1,548
M. S. Ketteringham, Waltham Cross	1,479
G. F. Tomlinson, Derby	1,436
G. Bell,* Tottenham	1,354
H. G. Miller, Tilbury	1,346
D. H. Porter, London	1,3 7

* Accepted.

Horden Colliery.—For the erection of 150 cottages at Horden Colliery, for the Horden Collieries, Ltd. Mr. E. W. Lyall, architect, 39, North Gate, Darlington:—

A. R. Burton, West Hartlepool	£30,430
J. & J. Airey, Darlington	25,550
J. G. Brown, West Hartlepool	25,630
H. Bell, Ryhope	23,475
S. Wilson,* Old Shotton, Castle Eden, R.S.O.	22,875
Pearson & Lathom, Sunderland (portion only)	17,800

* Accepted.

Irchester.—For the construction of sewage outfall works, for the parish of Irchester. Messrs. Sharman & Archer, engineers:—

Hacksley Brothers	£2,329 0
G. Henson	2,175 0
Young	2,131 10
Wilmott	1,945 10
Berrill & Green	1,800 0
Smart	1,788 0
Goodman & Murkett*	1,724 0

* Accepted. [Engineer's estimate, £2,042.]

Kendal.—For excavating, laying and jointing about 735yds. lineal of 18in. and 12in. stoneware pipe sewers and laying about 750yds lineal of subsoil water drains, for the Corporation. Mr. R. Hampton Clucas, M.S.E., borough surveyor:—

R. Shuttleworth, Ulverstone	£1,996 4 0
W. Canadice, Kendal	1,401 4 2
R. Woodburn, Kendal	1,341 3 0
T. & W. Dicken,* Lound, Kendal	1,254 6 9

* Accepted.]

London, S.E.—For the erection of addition buildings and structural alterations and repairs to shop and premises, No. 835, Old Kent Road, S.E., for Mr. W. C. Freeston. Mr. J. Halsted Waterworth, architect and surveyor, 281a, Queen's Road, New Cross Gate, S.E., and Welling, Kent:—

J. & A. Oldman	£349 0
H. M. Dobson	327 0
S. R. Best	304 14
B. Gale	264 9
W. Coates	252 10
F. Dawes	246 0
Hooper & Wright,* New Cross	209 15

* Accepted.

London, S.E.—For the erection of addition buildings and structural alterations and repairs to shop and premises No. 729, Old Kent Road, S.E., for Mr. W. C. Freeston. Mr. J. Halsted Waterworth, architect and surveyor, 281a, Queen's Road, New Cross Gate, S.E., and Welling, Kent:—

W. Falkner	£347 0
W. J. Dixon	287 0
W. Coates	249 0
S. R. Best	219 15
B. & A. Gale,* Old Kent Road, S.E.	199 0

* Accepted.

London, S.E.—For rebuilding back addition to No. 6, Clifton Road, Peckham, S.E., for Miss Haines. Mr. J. Halsted Waterworth, architect and surveyor, 281a, Queen's Road, New Cross Gate, S.E., and Welling, Kent:—

H. M. Dobson	£172 18
S. R. Best	169 10
W. Falkner	155 0
J. Green	141 6

London, S.E.—Accepted for the conversion into business premises of No 262, Brockley Road, S.E., for Mrs. M. A. C. Beacock. Mr. J. Halsted Waterworth, architect and surveyor, 281a, Queen's Road, New Cross Gate, S.E., and Welling, Kent:—

S. R. Best, Brockley	£210

London, S.E.—For sundry repairs and decorative work to property on Martins Estate at New Cross and Greenwich. Mr. J. Halsted Waterworth, surveyor to the estate, 281a, Queen's Road, New Cross Gate, and Welling, Kent:—

S. R. Best	£179 10
W. Falkner,* New Cross	147 0

* Accepted.

London, S.E.—For the erection of four blocks of dwellings to be erected by the Bermondsey Borough Council, upon the Fulford Street and Braddon Street site. Quantities by Mr. A. F. Wrightson:—

	Amount of Tender.			Additions.			Total.		
	£	s.	d.	£	s.	d.	£	s.	d.
F. & T. Thorne, Isle of Dogs, E.	47,562	0	0	2,727	14	11	50 289	14	11
Balaam Brothers, London, S.E.	45,437	0	0	2,961	0	0	48,398	0	0
B. E. Nightingale, Lambeth, S E.	44,298	0	0	3,736	0	0	48,034	0	0
Holloway Brothers, Ltd., Lambeth, S.E.	43,450	0	0	4,467	0	0	47,917	0	0
A. White & Co,, Rotherhithe	42,977	0	0	3,495	0	0	46,472	0	0
C. Gray Hill, London, E.C.	42,838	5	6	3,460	6	0	46,298	11	6
Perry & Co., Bow, E.	42,977	0	0	3,170	0	0	46,147	0	0
H. L. Holloway, Deptford, S.E.	42,580	0	0	2,660	0	0	45,240	0	0
H. Wall & Co., Kentish Town, N.W.	41,863	10	10	3,212	12	8	45,076	3	6
G. Parker, Peckham, S.E.	41,790	0	0	3,052	16	7	44,842	16	7
Kirk & Randall, Woolwich	41,204	0	0	2,473	8	0	43 677	8	0
Holliday & Greenwood, Brixton, S W.	39,877	0	0	2,687	0	0	42,564	0	0
Martin, Wells & Co., Ltd., Vauxhall, S E.	39,906	2	2	2,427	5	9	42,333	7	11
J. Chessum & Sons Bow, E.	39.140	0	0	2,756	12	2	41,896	12	2
Killby & Gayford, London, E.C.	38.600	0	0	3,048	0	0	41,648	0	0
Thomas & Edge, Woolwich, S.E.	38,447	0	0	2,521	0	0	40,968	0	0
W. Lawrence & Son,* Canal Works, Waltham Cross, N.	38,439	0	0	2,521	0	0	40 960	0	0

* Accepted.

London, S.E.—For underpinning and repairs to swimming bath at the Royal Normal College for the Blind, Upper Norwood, S.E. Mr. E. Harding Payne, A.R.I.B.A., 11, John Street, Bedford Row, W.C., hon. architect:—

W. Poole & Son, Ltd.	£170
J. & C. Bowyer	165
W. Sayer & Son	148
J. Stewart*	136

* Accepted.

London, S.W.—For additions and alterations to "Ormesby," 120, Upper Tulse Hill, S.W. Mr. E. Harding Payne, A.R.I.B.A., architect, 11, John Street, Bedford Row, W.C.:—

George Candler & Son‡	£690
W. Sayer & Son	680
J. Selway & Son	635
J. Anley & Son‡	634
J. Marsland & Son	625
J. Stewart*‡	547
Crabb & Son†	510

* Accepted. † Withdrawn.
‡ Additional estimates.

London, S.W.—For making up the carriageway and paving the footways of Townmead Road (section 6), for the Fulham Borough Council. Mr. Francis Wood, A.M.I.C.E., borough surveyor:—

Roadway.

J. Meeston	£1,833 2 11
G. Wimpey & Co.	1,447 0 0
B. Nowell & Co.	1,439 0 0
H. J. Greenham	1,215 0 0
J. Mears	1,100 0 0

Footway.

Imperial Stone Co.	£308 0
J. Ellis & Sons	290 15
Patent Victoria Stone Co.	284 0

London, S.W.—For the erection of Ingram House, Stockwell Road, S.W., for the Ingram Houses Co., Ltd. Mr. Arthur T. Bolton, 2, The Sanctuary, S.W., architect. Quantities prepared by Messrs. Widnill & Trollope, surveyors, Broad Sanctuary Chambers, Great Tothill Street, S.W.:—

Foster & Dicksee	£47,777	Shillitoe	£43,000
Trollope & Sons	43,950	Higgs & Hill	42,354
Holloway Brothers	43,731	Rudd & Sons*	40,500

* Accepted on a reduced scheme.

Lurgan (Ireland).—For the erection of eighteen labourers' cottages on selected sites within the district, for the Moria Rural District Council. Mr. W. W. Larmor, A.M.I.C.E., surveyor, Banbridge:—

Eight cottages—Design No. 2A.

T. Collen, Tandragree	£1,640
W. J. Haire, Portadown	1,600
G. Patton,* Windsor Avenue, Lurgan	1,400

Ten cottages—Design No. 2.

T. Collen	£2,200
G. Patton	2,150
W. J. Haire*	2,100

* Accepted.

Merthyr.—For rebuilding 52 and 53, Glebeland Street, Merthyr, for Mr. Dan Davies, The Oaklands. Mr. C. M. Davies, architect, 112, High Street, Merthyr:—

Jenkins Brothers	£1,363
S. Hawkins	1,358
E. Sullivan	1,350
J. Williams,* Castle Street	1,345

* Accepted. [All of Merthyr Tydfil.]

Newbold Moor (Chesterfield).—For making-up, paving, kerbing, channelling a private street within their district, for the Newbold and Dunston Urban District Council. Mr. Willis Glossop, surveyor, 20, Cavendish Street, Chesterfield:—

George H. Bateman, Chesterfield	£244 12 6
Frederick Lee, Alfreton, Chesterfield	240 0 0
James Glithro, Chesterfield	229 17 6
W. W. Bateman,* Chesterfield	173 4 4
John Sims, Chesterfield	165 10 4

* Accepted. [Surveyor's estimate £165 11s. 7d.]

Radstock.—For the erection of two semi-detached houses at Radstock. Mr. Stanley J. Gregory, architect, Radstock:—

W. Webb, Bath	£952
T. Foster, Radstock	925
Mannings & Sons, Bath	850
Hodder & Sons, Frome	818
W. Heal, High Littleton	780

St. Columb (Cornwall).—For the construction of sewers, from 7in. to 12in. diameter, with manholes, lampholes, and other appurtenances and works, for the Rural District Council. Mr. R. Hansford Worth, engineer, 42, George Street, Plymouth:—

R. Neal, Plymouth	£1,974
J. & T. Binns, Croydon	1,921
W. E. Bennett, Plymouth	1,786
E. Duke, Plymouth	1,766
G. Miners, Cornwall	1,756
W. Brown, Cornwall	1,669
R. Hooper,* St. Agnes, Cornwall	1,367

* Accepted.

Southall.—For the erection and completion of Holy Trinity Parish Hall, Lady Margaret Road, for the Building Committee. Messrs. Scott, M.S.A., & Hanson, architects, 10, Basinghall Street, E.C. Quantities by the architects:—

Fassnidge & Son, Uxbridge	£1,650
Dorey & Co., Brentford	1,593
Larke & Sons, Tenter Street, E.C.	1,590
Kearley, Uxbridge	1,579
Plaistow, Southall	1,540
Lough, Southall	1,447
A. & B. Hanson, Southall	1,114
Brown,* Southall	1,387

* Accepted. [Architect's estimate, £1,525.]

Stock, Essex.—For additions to house. Mr. R. Mawhood, architect, Chelmsford:—

C. Jennings, Margretting	£365
J. Rayner, Hanningfield	346
Baker & Sons, Danbury	345
A. Woodward,* Stock	300

* Accepted.

(*Continued on page* xiii.)

Address the M. J. and S. H. Adams' Firms as under:—

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LEEDS.

When writing to Advertisers please mention The Builders' Journal.

TENDERS (*cont. from* p. xi.)

North Berwick.—For the work required in erecting new gasworks, for the North Berwick Town Council:—(1) excavator, concretor and bricklayer and mason; (2) carpenter and joiner; (3) slater; (4) plumber; (5) plasterer; and (6) steel roofing, &c.:—

Mason.

A. McGregor & Sons, Gullane	£5,301	13	9
J. & W. Fleming, Peebles	4,652	12	2
R. Bruce & Son, Edinburgh	4,100	0	0
D. & J. Stratton, Edinburgh	4,027	12	4
I. Craik, Glasgow	3.920	16	8
J. Elliot	3,818	0	2
J. Dennis & Co., Ltd., Dalkeith	3,790	0	0
T. Topping, Edinburgh	3.654	18	3
C. M. Hamilton,* Hamilton	3,592	18	10

Joiner.

J. & F. Forrest, Edinburgh	1,126	0	0
T. Topping	1,094	10	8
W. McNiven & Sons, Edinburgh	1,093	15	9
R. McArthur & Son, East Linton	1,085	8	0
A. Calder, Edinburgh	1,044	5	0
W. Binst,* Woodhaven, Wormit, Fife	972	13	6

Slater.

D. Montgomery	190	9	0
J. Lumsden	177	17	3
J. Catchen, East Linton	177	14	8
P. White & Co., Glasgow	174	5	8
A. McLaren*	171	9	4

Plasterer.

P. F. Cavanagh, Edinburgh	112	3	0
J. Black	101	8	0
T. Arundel*	93	12	1

Plumber.

W. Hardbattle & Co., Leicester	313	7	3
A. Stewart	225	0	0
J. A. Morton & Co., Edinburgh	199	0	0
D. Purves & Co.	188	0	0
A. Anderson, Glasgow	174	17	7
D. Blake & Co.,* 10, Beaverhall Road, Edinburgh	173	10	0

Steel roofing.

P. & W. Maclellan, Ltd., Glasgow	948	17	11
J. Abbot & Co., Ltd., Gateshead-on-Tyne	852	6	7
J. Booth, Bolton	798	0	0
Westwood & Wrights, Brierley Hill	765	6	0
P. Bell & Son, Edinburgh	753	1	0
H. Balfour & Co., Ltd., Fife	740	0	0
E. J. Raybould & Co., Ltd., Workington	732	11	0
D. Clerk & Son, Ltd., Glasgow	723	7	9
F. Morton & Co., Ltd., Liverpool	710	18	6
Clyde Structural Iron Co., Ltd., Glasgow	705	5	7
Barrowfield Ironworks, Ltd, Glasgow	704	7	7
Steavenson & Co., London, E.C.	701	18	5
G. B. Smith & Co., Glasgow	698	0	5
T. Gibson & Son, Edinburgh	693	8	0
G. Sands & Son, Nottingham	693	5	0
J. Bell	684	17	4
R. Traill & Co., Leith	682	11	5
W. Little & Sons, Edinburgh	678	6	9
Bladen & Co., Ltd., Glasgow	677	6	6
A. & J. Main & Co., Ltd., Glasgow	675	0	0
A. Mather & Son, Edinburgh	667	15	6
J. Munday,* 30, East Vale Place, Kelvinhaugh, Glasgow	664	17	4
Walker Brothers, Ltd, Walsall	656	3	4

* Accepted. [Rest of North Berwick.]

Shirehampton.—For the erection of a new parish hall, for the Parish Council, Shirehampton, Bristol. Mr. F. Bligh Bond, architect, Star Life Building, St. Augustine's, Bristol. Quantities supplied:—

With slates.

W. H. Roe	£3,326	0	0
Heard & Son	2,951	0	0
Perkins & Sons	2,920	0	0
J. Chapman	2.915	10	6
Cowlin & Sons	2,883	0	0
T. R. Lewis	2,860	0	0
E. Love	2,803	0	0
J. Flower	2,770	0	0
C. A. Hayes*	2,715	0	0

With tiles.

W. H. Roe	£3,315	0	0
Heard & Son	2,935	0	0
Perkins & Sons	2,900	0	0
J. Chapman	2,881	12	7
Cowlin & Sons	2,873	0	0
T. R. Lewis	2,843	0	0
E. Love	2,772	16	0
J. Flower	2,738	0	0
C. A. Hayes	2,687	0	0

* Accepted.

Southminster, Essex.—For the erection of a Bank House. Mr. R. Mawhood, architect, Chelmsford:—

Smith & Son, Witham	£795
John Rayner, East Hanningfield	785
Baker & Sons, Danbury	680
J. Bishop,* Southminster	635

* Accepted.

Teignmouth.—For the erection of new Congregational schools. Messrs. Bridgman & Bridgman, architects, Torquay and Paignton. Quantities by Mr. Vincent Cattermole Brown, Paignton:—

G. H. Marshall, Birmingham	£3,530	0
S. Blatchford, Torquay	1,850	0
J. Mumford, Torquay	1,849	0
H. Mills, Newton Abbot	1,815	0
F. C. Francis, Teignmouth	1,795	0
E. Andrews, Teignmouth	1,750	10
J. J. Hayman,* Teignmouth	1,745	0

* Accepted.

Tunbridge Wells.—For the construction of works of sewerage and sewage purification for Speldhurst and Langton, for the Tonbridge Rural District Council. Mr. Frank Harris, engineer, Broadway, Southborough, Tunbridge Wells:—

T. Rowland, Northwick	£9,924	1	5
Bell & Co. Tottenham	9,914	1	2
Davis, Ball & Co., London	9,816	13	4
W. Maunders, Leyton	9,640	0	0
W. Smith, St. Leonards	8,787	11	5
J. Jarvis, Tunbridge Wells	8,613	10	0
E. Iles, jun., Wimbledon	7,899	10	0
Arnold & Sons, East Peckham	7,491	19	6
G. J. Rayner, Croydon	7,413	8	3
Martin & Co, Tonbridge	7,339	10	0
Streeters & Todhunter, Godalming	7,227	0	0
S. Wood, Bristol	7,163	9	5
Peerless, Dennis & Co., Eastbourne	6,768	0	0
A. Dixon & Co.,* Bradford	6,083	3	2

* Accepted. [Engineer's estimate £7,491 9s.]

Watford.—For the laying only of about 1,480 yards 15in diameter earthenware sewer and storm-water drain, 1,140 yards, 12in. ditto, together with the necessary manholes, iron pipes, &c., for the Watford Urban District Council:—

E. Iles, jun., Wimbledon	£4,724	6	10
A. B. Champniss, Wealdstone, Middlesex	3,480	13	0
Bracey & Clark, Watford	2,880	0	0
Leslie & Co.	2,832	0	0
J. Dickson, St. Albans	2,686	5	0
T. Free & Sons, Maidenhead	2,619	13	3
G. G. Raynor, Croydon	2,378	10	0
H. Brown,* Whippendell Road Watford	2,297	0	0

* Accepted.

Welling, Kent.—Accepted for the erection of four shops and stabling in rear, High Street, Welling, Kent. Mr. J. Halsted Waterworth, architect and surveyor, 281a, Queen's Road, New Cross Gate, S.E., and Welling, Kent:—

E. J. Garlick & Co., Welling.

Wicklewood (Norfolk).—For the certain alterations and additions to the workhouse at Wicklewood, for the Guardians of Forhoe Union. Mr. J Owen Bond, architect 1c, Upper King Street, Norwich:—

Chapman & Son, Norwich	£2,795	0
Scarles Brothers, Norwich	2,713	0
Taylor, Norwich	2,654	0
Holmes & Son, Norwich	2,638	0
Skipper & Bartram, Wymondham	2,588	10
Bowden, Wymondham	2,583	0
Smith Norwich	2,446	18
Boddy & Son, Norwich	2,359	0
Young & Son, Norwich	2,347	0
Gill, Norwich	2,334	0
Semmence, Wymondham	2,331	0
Greengrass, Norwich	2,321	0
Hawes, Norwich	2,303	0
Blyth, Foulsham	2,290	0
Gunton & Palmer,* Costessey	2,187	12
Hannent, Norwich	2,184	14

* Accepted.

Woolwich.—For pulling down and rebuilding the club premises, 87 and 88, Beresford Street, Woolwich, for the Committee of the Labour Club and Institute, Beresford Street, Woolwich. Mr. J. O. Cook, architect, 1a, Eleanor Road, Woolwich:—

Foster Brothers, Norwood Junction	£2,746
B. E. Nightingale, Albert Embankment	2,730
J. Lonsdale, Swanley Junction	2,700
Thomas & Edge, Woolwich	2,515
Davis & Leaney, Kent	2.483
C. North, Stratford	2,447
A. J. Ware, Plumstead	2,373
Sanford & Co, Charlton	2,324
Sims & Woods	2.317
W. Harris * Steam Joinery Works, Elizabeth Street, North Woolwich	2,100

* Accepted.

New Companies.

FISHPOOL LIBERAL BUILDING CO, LTD., to acquire a plot of land in Carlton Street, Fishpool, Bury. Capital: £1,000 in £1 shares.

JOSEPH CLAYTON, LTD., stone merchant, quarry owner, masons, builders, &c. Capital: £15,000 in £1 shares.

LONDON ASPHALTE CO., LTD, asphalt manufacturers and dealers, paviors, contractors, &c. Capital: £30,000 in £5 shares.

CASTLEBAR ESTATE CO. (NO. 2) LTD., land, house, property, building and finance company 47, Bedford Row, W.C. Capital: £4,004 in £10 shares.

WREXHAM BRICK AND TILE CO., LTD., manufacturers and dealers in bricks, tiles, pipes, clay, terra-cotta, &c. Capital: £7,000 in £1 shares.

LIVERPOOL BUILDING MATERIAL AND CEMENT CO., LTD., dealers in cement and building materials, timber, builders' merchants and contractors. Capital: £5,000 in £1 shares.

THOMAS REEVES, LTD., worker and dealer in marble, granite, slate, glass, brick, iron, lead and stone, &c., Bridge Wharf, 594, Old Kent Road, S.E. Capital: £20,000 in £1 shares.

WILSON'S (ST. JAMES'S SQUARE, MANCHESTER), LTD., ironmongers, engineers and electricians, &c., 3, St. James's Square, Manchester. Capital: £10,000 in £1 shares (5,000 preference).

CHALK POWER-GAS SYNDICATE, LTD., manufacturers of power and other gas from chalk, limestone and other carbonates, cement and lime manufacturers, engineers, &c. Capital: £25,000 in £1 shares.

Coming Events.

Wednesday, July 29.
INSTITUTION OF MECHANICAL ENGINEERS.—Meeting at Leeds (Second and Last Day), at 10 a m.

Saturday, August 1.
NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS (Newcastle-on-Tyne).—Annual General Meeting of Members at 2 p.m. Mr. Robert R. Simpson on "Well-Sinking in the Punjab."

Wednesday, August 12.
INSTITUTE OF SANITARY ENGINEERS, LTD.—Meetings of Examination and Literary Committee at 3.30 p.m., General Purposes and Finance Committee at 4.15 p m., Election of Committee at 5.15 p.m., and Council Meeting at 7 p.m.

Tuesday, Sept. 1, to Friday, Sept. 4.
IRON AND STEEL INSTITUTE (Barrow-in-Furness).—Annual Meeting

Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

DURING THE WEEK ending July 25th thirteen failures in the building and timber trades in England and Wales were gazetted.

J. RILEY, builder, Lower Edmonton. R.O. July 13th.

J. HOWARD & Co., builders' merchants, London, N.E. R.O. July 17th.

FINCH BROTHERS, builders, Wimbledon Park. P.E., Wandsworth C.C., August 6th, at 12.

I. GIBSON, builder, Hull. P.E., Hull C.C, August 17th, at 12.

H. P. H. FRISWELL, artist, Talycafn. P.E., Bangor Magistrates' Room, August 13th, at 12.15.

R. T. HORTOP, builder, Plymouth. R.O. and adj. July 16th.

G. W. RAINER, builder, Broughton Astley. P.E., The Castle, Leicester, July 31st, at 10.

W. STOKES, builder and contractor, Reading. Adj. July 4th. First meeting, Queen's Hotel, Reading, July 30th, at 12. P.E., Reading Assize Courts, same day, at 2.

J. COOPER, plasterer and builders' merchant, Stockton-on-Tees. Adj. July 15th. P.E., Stockton-on-Tees C.C., July 29th, at 10.45.

A. ROBINSON, builder, South Shields. R.O. July 13th and adj. July 15th. P.E., Newcastle-on-Tyne C.C., August 13th, at 11.

A. T. HAINES & Co., builders, West Ham. First meeting, Bankruptcy Court, London, July 29th, at 12. P.E., same, August 18th, at 12.

J. CAMERON, timber merchant, London, N. R.O. July 16th. First meeting, Bankruptcy Court, July 29th, at 2.30. P.E., same, September 1st, at 11.

C. SHEPHERDSON, builder, Hessle. First meeting, O.R.'s, Hull, July 29th, at 11. P.E., Hull C.C., August 17th, at 2.

The following companies are to be wound up:—
DERBY OXIDE AND COLOUR CO., LTD.
TRENT CONTRACT CO., LTD.

Trade and Craft.

Lifts and Cranes.

An excellent catalogue of lifts and cranes is issued by Messrs. Joseph Richmond & Co., Ltd., engineers, of 30, Kirby Street, Hatton Garden, London, E.C. The first section is devoted to photographic illustrations of electric lifts for passengers, goods and service. The two former are fitted with the "Richmond-Carey" patent controller, consisting of a series of buttons inside the car which, when pressed, set the lift in motion, so that it automatically ascends or descends to the particular floor to which the button corresponds, and stops there: similarly, on pressing a button on any floor the lift will automatically come to that floor. Each door is provided with a circuit breaker operating in the main circuit, so that the lift can only work when all the doors are shut. The second section of the catalogue is devoted to hydraulic lifts and cranes, the latter including a particularly well designed wharf crane. A third section of the catalogue deals with various handsome lift cars in wrought-iron, the "Definite" safety gear, and fire-proof tariff or compartment doors, built in accordance with the requirements of the fire insurance offices: while a fourth section illustrates a power lift designed to stand rough usage, a hand-power goods lift, the "Eccentric" patent self-sustaining dinner lift, a hand-power crane, and vertical and skidway platform hoists fitted with wrought-iron framed crabs.

Complete List of Contracts Open.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED
		BUILDING:		
July	30	Abercanaid—Alterations, &c., to Shop and Dwelling-house	——	R. C. Jenkins, Architect, Cefn Coed.
"	30	Glyncorrwg—Rebuilding Chapel	——	W. B. Rees, 37 St. Mary Street, Cardiff.
"	30	Gordon—House	School Board	T. R. Atkinson, Architect, Earlston.
"	30	Whitehaven—Rebuilding	——	J. S. Moffat 53 Church Street, Whitehaven.
"	30	Esholt—Two Houses	——	Empsall & Clarkson, 7 Exchange, Bradford
"	30	Devizes—Alterations to Town Hall	Corporation	Borough Surveyor, 15 Market Place, Devizes.
"	30	Aberaman—Seventy-two Houses	Pleasant View Building Club	T Roderick, Architect, Clifton Street, Aberdare.
"	30	Driffield—Additions to Infirmary	Guardians	J. Shephardson, Architect, Driffield.
"	30	Ealing, W.—Slipper Baths	Town Council	C. Jones, Surveyor, Town Hall, Ealing, W.
"	30	Gateshead—Stables	Borough Council	J. Bower, Borough Surveyor, Town Hall, Gateshead.
"	30	Ynysybwl—Restoration of Church	——	J. Morgan, 68 Robert Street, Ynysybwl.
"	31	Gateshead—Rebuilding Corney House	R. Emmerson & Son	L. H. Armour, 16 West Street, Gateshead
"	31	Grimsby—Wall, &c.	Public Works Committee	H. G. Whyatt, Borough Engineer, Town Hall Square, Grimsby.
"	31	Kew—Reconstruction of Old Herbarium	Commissioners of H.M.Works,&c.	J. B. Westcott, H.M. Office of Works, Storey's Gate, S.W.
"	31	Maryport—Warehouses	J. Thomlinson, Ltd.	C. Eaglesfield, Architect, Maryport.
"	31	Stanley—House	W. Butler	P. Frater, Howden-le-Wear.
"	31	Walton-on-Thames—Hospital	——	J. Gough, 28 Craven Street, Charing Cross, London, W.C.
"	31	Whitehead—Rebuilding Houses and Shops	——	F. W. Lockwood, 91 Victoria Street, Whitehead.
"	31	Edenderry—Cottage and Out-Offices	Town Council	Mr. Waters, Engineer, Edenderry.
"	31	Enniskillen—Cells at Courthouse	Fermanagh County Council	E. H. Archdall, Secretary, Courthouse, Enniskillen.
"	31	Hayling Island—Coastguard Station	Admiralty	Director of Works. 21 Nothumberland Avenue, London, W.C.
Aug.	1	Coventry—Sulphate House, &c.	Gas Committee	F. W. Stevenson, Engineer, Gasworks, Coventry.
"	1	Abertillery—Laundry, &c.	Steam Laundry Co., Ltd.	G. C. Hillard, Architect, Market Chambers, Abertillery.
"	1	Thornton Heath—Schools	Croydon School Board	B. Rule, Clerk, School Board Offices. Katharine Street, Croydon.
"	1	Hillsborough—Dwelling-house	G. Bell, J.P.	H. Hobart, Architect, Dromore, co. Down.
"	1	Dewsbury—Bricks, Lime, Cement, &c.	Corporation	H. Dearden, Borough and Water Engineer, Town Hall, Dewsbury.
"	1	Pontefract—Additions to Workhouse	Union Guardians	A. A. Hartley, Architect, County Chambers, Castleford.
"	3	Distington—Enlargement of School	School Authority	H. Hill, Dyon Side, Distington.
"	3	East Kilbride—Cemetery Works	Parish Council	J. Cowan, 179 West George Street, Glasgow.
"	3	Glasgow—Firebricks, &c.	Corporation	Gas Manager, 45 John Street, Glasgow.
"	4	Watford—Household Management Centre	School Board	W. H. Syme, 4 High Street, Watford.
"	4	Grayne—Restoration of Church	——	Arnold, Baker & Day, Solicitors, The Precincts, Rochester.
"	4	Poynings, Hangleton—Additions, &c., to Churches	——	E. H. L. Barker, 146 St. Owen's Street, Hereford.
"	4	Llanelly—Villa	——	W. Griffith, Falcon Chambers, Llanelly.
"	4	Shrewsbury—Station Buildings	London & North-Western Rly.Co.	Joint Engineer, Woodside Station, Birkenhead.
"	4	London, N.E. Bandstand, Watchbox, Convenience, &c.	London County Council	Gen. Constrctn. Sectn. Architect's Dept., 18 Pall Mall East, S.W.
"	4	Reading—Council School	Local Education Authority	C. Smith & Son, Architects, Friar Street, Reading.
"	4	Manchester—Bricks, &c.	Rivers Committee	Secretary, Rivers Committee Dept., Town Hall, Manchester.
"	4	Gilwern—Alterations, &c., to Inn	——	B. J. Francis, Architect, Abergavenny.
"	4	Gilwern—Stables, &c., at Inn	——	B. J. Francis, Architect, Abergavenny.
"	6	Ynysybwl—Chapel	English Wesleyans	A. O. Evans, Pontypridd.
"	6	Ballee, Downpatrick—Vestry and Porch	Church Wardens	Rectory. Ballee, Downpatrick.
"	7	Cemaes, Anglesea—Coastguard Station	Admiralty	Director of Works Dpt., 21 Northumberland Avenue, London, W.C
"	7	Crewe—Post Office	Commissioners of H.M.Works,&c.	Secretary, H.M. Office of Works, &c., Storey's Gate, S.W.
"	7	Bridgend—Infirmary	Guardians	P. J. Thomas, Architect, Bridgend.
"	7	Thornton Heath—Sorting Office	Commissioners of H.M.Works,&c	Secretary, H.M. Office of Works, &c., Storey's Gate, S.W.
"	7	Faversham, Kent—Police Stations, &c.	County Council	County Surveyor, 86 Week Street, Maidstone.
"	7	Ashford, Middlesex—Renewals of Roofing, &c.	West London District School Managers.	F. G. Beeching, Clerk to Managers, Ashford, Middlesex.
"	8	Ulverston—Alterations, &c., to Hospital	——	J. W. Grundy & Son, Architects, Central Buildings, Brogden Street, Ulverston.
"	10	Pontnewynydd—Forty Houses	Grove Estate Building Club	Fisher & Sons, Architects, Club Chambers, Pontypool.
"	10	Preston—Bridge	Lancs County Council	W. C. Hall, County Bridgemaster, County Offices, Preston.
"	10	Sunderland—Vicarage	Rev. L. D. Williams	J. Potts & Son, 57 John Street, Sunderland.
"	12	Homerton, N.E.—Scullery	Hackney Union Guardians	W. A. Finch, 76 Finsbury Pavement, E.C.
"	15	Kidwelly, Wales—Chapel	Church Trustees	J. Anthony & Sons, Coal Merchants, Anchor House, Kidwelly, Wales.
"	15	Epsom—Depot, &c.	Urban District Council	E. R. Capon, Surveyor, Council Offices, Bromley Hurst, Epsom.
"	17	Cheadle—Tramway Works	Cheadle and Gatley U.D.C.	C. R. Brady, 13 Warren Street, Stockport,
"	26	Troedyrhiw—School	Merthyr Tydfil School Board	J. Ll. Smith, Board's Architect, Aberdare.
"	31	New Malden—Offices, &c.	Maldens and Coombe U.D.C.	W. Hope, Architect, Seymour Road, Hampton Wick.
		ENGINEERING:		
July	30	Manchester—Machinery, &c.	Baths & Washhouses Committee	City Architect, Town Hall, Manchester.
"	30	King's Lynn—Beacons	Conservancy Board	Harbour Master, King's Lynn.
"	30	Wolverhampton—Pumping Machinery	Guardians	Town Clerk, Union Offices, St. Peter's Close, Wolverhampton.
"	31	Swadlincote—Flushing Chambers	Urban District Council	T. Kidd, Town Engineer, Swadlincote.
"	31	Hapton—Electrical Lighting	Parish Council	E. O'Shaughnessy, 16 Hamilton Terrace, Padiham.
Aug.	1	Withington—Reservoir, &c.	Urban District Council	A. H. Mountain, Council's Surveyor, Town Hall, West Didsbury.
"	1	Foleshill—Boiler	Corporation	F. W. Stevenson, Engineer, Gasworks, Coventry.
"	1	Melrose—Water Supply	Roxburghshire County Council	W. R. Copland, 146 West Regent Street, Glasgow.
"	1	Ushaw Moor—Bridge	Brandon and Byshottle Urban District Council.	J. E. Parker, Engineer, Post Office Chambers, Newcastle-on-Tyne.
"	1	Horncastle—Air Valves	Water Company	Clitherow & Son, 7 Lindsey Court, Horncastle.
"	1	Pontefract—Fire Appliances, Electric Light, &c.	Union Guardians	A. A. Hartley, Architect, County Chambers, Castleford.
"	3	Pumpsaint, Wales—Steel Bridge	Llandovery Rural Dist. Council	D. T. M. Jones, Clerk, Council Offices. Llandovery.
"	3	Glasgow—Washing Machines	Corporation	W. Thompson, 187 George Street, Glasgow.
"	3	Glasgow—Water-piping	Corporation	D. M'Coll, 65 Cochrane Street, Glasgow.
"	3	Belfast—Ferry Boat	Harbour Commissioners	W. A. Currie, Secretary, Harbour Office, Belfast.
"	4	Christiania—Wheels and Axles	Norwegian State Railways	Director of Engineering Department, Christiania.
"	4	Manchester—Distribution and Discharge Apparatus	Rivers Committee	Secretary, Rivers Department, Town Hall, Manchester.
"	4	Aldershot—Plant	Urban District Council	Engineer, Council's Offices, Aldershot.
"	4	Cudworth—Gas Main	Urban District Council	W. W. Hutchinson, Gas Engineer, Pontefract Road, Barnsley.
"	4	Herne Bay—Repairing Pier	Urban District Council	F. W. J. Palmer, Council's Surveyor Council Offices, Herne Bay.
"	4	Kelso—Well	Town Council	W. R. Copland 146 West Regent Street, Glasgow.
"	4	Manchester—Mortar Mill	Rivers Committee	Rivers Department, Town Hall Manchester.
"	4	Manchester—Widening Bridge	Improvement and Buildings Committee.	City Surveyor, Town Hall, Manchester.
"	4	Swinton—Gas Engines and Pumps	Urban District Council	H. Entwistle, Surveyor, Council Offices, Swinton.
"	5	Foleshill—Sewerage Works	Rural District Council	C. N. Lailey, 6 The Sanctuary, Westminster.
"	5	Hull—Reservoir	Corporation	F. J. Bancroft, City Engineer, Alfred Gelder Street, Hull.
"	5	Tenbury—Laying, &c., Pipes	Rural District Council	Wilcox & Raikes. 63 Temple Row, Birmingham.
"	6	Portland Bill, Dorset—Lighthouse, &c.	——	Principal Keeper, Low Lighthouse, Portland, Dorset.
"	6	Salford—Steel Doors	——	W. H. Hunter, 41 Spring Gardens, Manchester.
"	7	Cromer—Reservoir	Urban District Council	J. C. Mellis, 264 Gresham House, Old Broad Street, London, E.C.
"	7	Hawarden—Shaft	Queensferry Colliery Co., Ltd.	Secretary, Queensferry Colliery Co., Ltd.. Hawarden, near Chester.
"	7	Chatham—Timber Landing Stage	Corporation	A. T. Walmisley, 9 Victoria Street, Westminster, S.W.
"	8	Gijon, Spain—Port Works	——	Ministry of Agriculture &c., and Public Works, Madrid.
"	8	Accrington—Cold-air Store	Town Hall and Markets Committee.	Borough Engineer, Town Hall, Accrington.
"	8	Boyle, co. Roscommon, Ireland—Waterworks	No. 1 Rural District Council	J. H. M'Swiney, Engineer, Avenue Chambers, Belfast.
"	10	Birmingham—Bacteria Beds, &c	Tame and Rea District Drainage Board.	J. D. Watson, Board's Engineer, Tyburn, near Birmingham.
"	10	Kettering—Embankment. &c.	Urban District Council	T. R. Smith, Council's Engineer, Market Place, Kettering.
"	10	Glasgow—Two Ferryboats	Clyde Navigation Trustees	G. H. Baxter, Engineer, Clyde Trust Works, Dalmuir.
"	11	London, S.W.—Switchboards	London County Council	Clerk, County Hall, Spring Gardens, S.W.
"	15	Northampton—Electrical Plant, &c.	Corporation	A. Fidler, Borough Engineer, Guildhall, Northampton
"	15	Boskoop. Holland—Acetylene Plant	Town Council	P. A. Ottalander, Council Offices, Boskoop, Holland.
"	18	Lyndhurst—Sewage Disposal Works	New Forest Rural District Council	Combes & Bennett, Engineers, Midland Bank Chbrs., Southampton.
		FURNITURE:		
Aug.	10	Southall—Furnishing at Sanatorium	Southall-Norwood Urban District Council.	A. L. Houlder, Clerk, Council Offices, Southall.
"	23	Burnley—Furnishing Schools	——	A. J. Shaw & T. H. Vowles, Architects, Mercantile Chmbrs., Burnley.

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Appointments Wanted.

The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.

A BUILDER, PLUMBER & DECORATOR retiring from large estate needs RE-ENGAGEMENTS. Certificated bailiff. Rents collected, estates managed. Well up in all general repairs. Own plant and tools for all trades. Abstainer.—Apply, E. Payne, 27, Quaker Street, Spitalfields.

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HOT WATER FITTER'S MATE wants Work; good, strong; age 20; knowledge of smithing.—A.D., 89, Denmark Road, West Kilburn.

JUNIOR ASSISTANT desires engagement. Neat Draughtsman, Tracer and Colorist. Measuring and Plotting. Good references.—F. Ash, Cotham Road South, Bristol.

JUNIOR ASSISTANT DISENGAGED. Salary no object.—Box 2524, Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

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NOTE.—Advertisements for this page must reach the Office not later than 5 o'clock p.m. on Monday.

Complete List of Contracts Open *—continued.*

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDERS MAY BE OBTAINED.
	IRON AND STEEL:		
July 30	London, E C.—Railway Material	Gt. Indian Peninsula Rlwy. Co.	Secretary, 48 Copthall Avenue, London, E.C.
" 31	London, N.—Manhole Covers, &c.	Tottenham and Wood Green Joint Drainage Committee.	P. E. Murphy, 712 High Road, Tottenham.
Aug. 1	Glasgow - Pipes	Corporation	J. R. Sutherland, 45 John Street, Glasgow.
" 1	Foleshill—Ironwork	Coventry Corporation	F. W. Stevenson, Engineer Gasworks, Coventry.
" 1	Dewsbury—Iron and Steel; Iron Castings, &c.	Corporation	H. Dearden, Borough and Water Engineer, Town Hall, Dewsbury.
" 3	Radcliffe—Rails, &c.	Urban District Council	W. L. Rothwell, Engineer, Council Offices, Radcliffe.
" 3	Rochdale—Steelwork	Corporation	S. S. Pratt, Borough Surveyor, Town Hall, Rochdale.
" 3	Amsterdam—Steel Plates, &c.	Dutch Iron Railway Co.	Administratie Gebouw, Dutch Iron Railway Co., Droogbak, Kamer 154, Amsterdam.
" 4	London, N.E.—Iron Railings	London County Council	Gen. Construction Section, Architect's Dept., 18 Pall Mall East, S.W.
" 4	Haslemere—Pipes, &c.	Hambledon Rural District Council	R. F. Grantham & Son, 23 Northumberland Avenue, W.C.
" 4	Manchester—Ironwork, Valves, &c.	Rivers Committee	Secretary, Rivers Department, Town Hall, Manchester
" 4	Hendon, N.W.—Wrought-iron Fencing	Urban District Council	S. S. Grimley, Engineer, Council Offices, Hendon, N.W.
" 4	Swinton—Wrought iron Swings	Urban District Council	H. Entwistle, Council's Surveyor, Council Offices, Swinton.
" 5	Dublin—Rails, &c.	Gt. Southern & Western Rly. Co. (Ireland).	Company's Engineer, Inchicore, Dublin.
	PAINTING AND PLUMBING:		
July 30	Hull—Painting	——	J. Watson, Surveyor, Cogan Chambers, Hull.
" 30	London, N.E.—Painting, Decorating, &c., to Town Hall	Hackney Borough Council	N. Scorgie, Borough Engineer, Town Hall, Hackney.
" 31	Darlaston—Colouring, &c., to Town Hall	Finance Committee	A. Slater, Hon. Secretary, Butcroft, Darlaston.
" 31	Trowbridge, Wilts—Painting, &c., Market Hall	Urban District Council	H. G Nicholson-Lailey, Town Surveyor, Town Hall, Trowbridge.
Aug. 1	Dewsbury—Paints, Oils, Brushes, &c.	Corporation	H. Dearden, Borough and Water Engineer, Town Hall, Dewsbury.
" 3	Fenwick—Painting, &c., to School Premises	Fenwick and Moss School Board	T. Latham, Clerk, Board's Offices, Fenwick.
" 4	Longford—Painting Houses	Urban District Council	J. Slevin, Town Surveyor, Longford.
" 5	Rochdale—Painting Library	Public Libraries, &c., Committee	S. S. Platt, Borough Surveyor, Town Hall, Rochdale.
" 6	Upper Holloway, N.—Painting Infirmary	Guardians	W. Smith, 65 Chancery Lane, W.C.
" 6	London, E.—Painting, &c., Workhouse	Stepney Union Guardians	Master, Workhouse, St. Leonard's Street, Bromley-by-Bow, E.
" 7	Chatham—Painting, &c., Pier	Corporation	A. T. Walmisley, 9 Victoria Street, Westminster, S.W.
	ROADS AND CARTAGE:		
July 30	Ealing, W.—Making-up Road	Town Council	C. Jones, Borough Engineer, Town Hall, Ealing, W.
" 30	St. Neots—Granite	Urban District Council	J. Edey, Surveyor, South Street, St. Neots, Hunts.
" 31	Chorlton-cum-Hardy—Kerbing, &c.	Withington U.D.C.	A. H. Mountain, Council's Surveyor, Town Hall, West Didsbury.
Aug. 1	East Dereham—Granite	Urban District Council	H. G Himson, Theatre Street, East Dereham.
" 1	Dewsbury—Granite, Stone Kerbs and Flags	Corporation	H Dearden, Borough and Water Engineer, Town Hall, Dewsbury.
" 1	Manchester - Setts	Tramways Committee	J. M. M'Elroy, 55 Piccadilly, Manchester.
" 1	Littlehampton—Steam Rolling	Urban District Council	A. Shelley, Clerk, Town Offices, Littlehampton.
" 4	Mansfield—Making-up Road	Corporation	R. F. Vallance, Surveyor, White Hart Chambers, Mansfield.
" 6	Thames Ditton - Construction of Roads, &c.	——	C. & F. Rutley, 11 Dowgate Hill, E.C.
	SANITARY:		
July 30	Eailing, W.—Sewers, &c.	Town Council	C. Jones, Borough Engineer, Town Hall, Ealing, W.
Aug. 1	Belper—Pipe Sewers	Rural District Council	R. C. Cordon, Council's Surveyor, Council Offices, Duffield, Derby.
" 1	Huddersfield—Sewering, &c.	Corporation	Borough Engineer, 1 Put Street, Huddersfield.
" 3	Radcliffe—Main Drainage	Urban District Council	Engineer, Council Offices, Radcliffe.
" 4	Hale, Cheshire—Sewers, &c.	Urban District Council	F. J. Lobley, Engineer, Hale, Cheshire.
" 4	Talgarth, Herefordshire—Sewerage & Sewage-Disposal Wks.	Rural District Council	R. E. W. Berrington, Engineer, Bank Buildings, Wolverhampton.
" 5	Okengates—Sewers	Urban District Council	R. E. W. Berrington, Engineer, Bank Buildings, Wolverhampton.
" 5	West Bromwich—Sewers	Town Council	A. D. Greatorex, Borough Engineer, Town Hall, West Bromwich.
" 5	Foleshill—Sewerage Works	Rural District Council	C. Nicholson-Lailey, 6 The Sanctuary, Westminster, S.W.
" 10	London, N.—Construction of Sewers	Hornsey U.D.C.	E. J. Lovegrove, 99 Southwold Lane, Highgate, N.
	TIMBER:		
July 30	Lytham—Wood Blocks	Urban District Council	A. J. Price, Surveyor, Council Offices, Lytham.
" 31	Torquay—Timber	Town Council	H. A. Garrett, Borough Engineer, Council Offices, Torquay.
Aug. 1	Dewsbury—Creosote Oil	Corporation	H. Dearden, Borough and Water Engineer, Town Hall, Dewsbury.
" 12	London, S.W.—Timber	Egyptian State Railways	Lieut.-Col. Western, Broadway Chambers, Westminster, S.W.

List of Competitions Open.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	DEPOSIT REQUIRED FOR CONDITIONS, &c.	BY WHOM ADVERTISED.
Aug. 31	Blackpool—New Offices	——	£1 1s.	C. Arthur, 34 Victoria Street, Blackpool.
Sept. 12	Stonehaven, Scotland—Alterations and Additions to Town Hall.	——	——	G. Murdoch, Borough Surveyor, Stonehaven.
Oct. 2	Bromley, E.—Public Library	£75, £25.	10s. 6d.	H. Heckford, Borough Surveyor, Council Offices, High Street Poplar.
" 12	Rawtenstall—Free Library, &c.	£100, £50, £30.	£2.	A. W. Lawson, Borough Surveyor, Municipal Offices, Rawtenstall.
1904. Mar. 31	Vienna—Machinery to Lift Boats on Canal	100,000, 75,000 and 50,000 kronen.	——	Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C.

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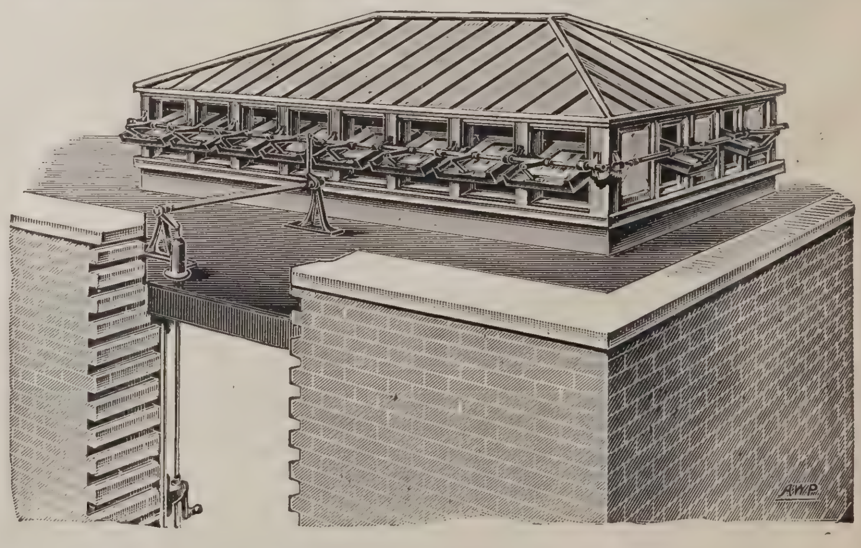

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